

# STEREOPLEA:

OR,

THE ARTIFICIAL DEFENCE OF THE HORSE'S  
FOOT CONSIDERED.

ALSO,

HINTS FOR REARING YOUNG COLTS, SOUND  
AND WITH GOOD FEET.

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## P R E F A C E.

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DURING an indifferent state of health which I suffered in the year 1817, and very doubtful of what might be the issue of my illness, I resolved to throw together, in as good order as the time would permit, a variety of loose remarks, made at different times, relating to the Horse, in order that they should not be entirely lost in case of the fatal termination of my illness, and gave them to be printed under the title of, *Stereoplea, or the Defence of the Horse's Foot considered.*

It having pleased a kind Providence, however, to spare my life on this occasion, and to protract it to the present unexpected date, (1832,) and the above edition being long since out of print—for, being under many discouragements at the time, I printed only a small edition of it—so I now avail myself of the leisure which a few months' visit to the Continent gives me, of revising this work, and of adding what further appears necessary to make it a useful appendage to my other works on the Foot, by adverting to such parts or branches of the art as could not very well, or consistently at least, form any part of those works.

In respect to the title I have chosen, I may here just remark, that the term *Stereoplea* is derived from the Greek word στερεω, *to strengthen* ;

and *οπλη*, *armatura*, or *the hoof*: appropriated to signify the art of strengthening the horse's foot, and of rendering it more enduring the roads, whether by natural means or by artificial protection, used in preference to the old term *Farriery*, which is a mere corruption of *Ferriery*, derived from the Latin *Ferrum*, *iron*; and in no way is indicating the object of the art, or what it is intended to illustrate, and as being in its present state fraught with innumerable errors and abuses, and even gross defects in principle, we have thought the sooner so wretched a term and art is forgotten and lost sight of, the better.

After due consideration, we believe the whole matter or art relating to Horses admits of useful division into three *large classes*, thus laying the foundation of a real system.

1. The whole Anatomy of the animal, and physiology and functions, to be entitled *HIPPOTOMIA*, or *Hippotomy*.

2. The Diseases of the Horse,<sup>1</sup> their symptoms and treatment, to be entitled *HIPPIATRIA*, or the *Hippiatric Department*.

3. The Foot and its anatomy, as far as respects the shoeing and the shoeing itself, and all belonging to it, having the distinctive appellation of *STEREOPLEA*, or *Stereoplic Department*.

It is exclusively this last division we propose now to consider in this work.

## STEREOPLA, &c.

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THIS very multifarious subject of the horse's foot, and its shoeing, as it is called, will permit, we should apprehend, of division most usefully into the following heads or divisions, embracing the entire subject.

1stly. A view or short notice of the body itself, or machine intended to be supported and conveyed about by the foot, and how this is brought to bear or rest upon it.

2ndly. A view of the general principle aimed at in the construction of the foot ; *viz.* its elasticity.

3rdly. The actual structure of the foot, its physiology, or offices of its respective parts.

4thly. The best mode of defending the foot in use on the road, and of preserving its natural properties unimpaired.

5thly. On rearing the young colt, that his foot may attain to the greatest beauty, strength, and perfection.

To the above divisions, in order fully to embrace and complete the entire circle of the subject, should be subjoined the nine plagues or diseases which commonly beset the foot after the commencement of shoeing, and which, for the most part, are induced by artificial causes, emanating in one way or another from the practice of the said art of Farriery. The most frequent of all these is, the compressed, condensed, hardened, and contracted state of the foot, from the natural operation and restraining effects of the common shoe ; Founder, Frush, Canker, Sand-crack, Ring-bone, Quittor, from treads, pricks or nail-stabs ; with or without fractured coffin bone ; and, finally, *kennel* or *street nails*.

For which diseases and their treatment, we must take the liberty of referring our readers to such of them as we have published an account of, in small, separate Essays ; the three first heads or divisions of this arrangement will also be found fully discussed in the *Hippodonomia* ; so that there remains only to be considered in this place the fourth and fifth divisions, which relate to the present art of defending the foot, describing the actual practice of it as it is performed at this



day ; and we are then led to propositions and suggestions for other modes of defending this organ, upon more scientific principles, and less injurious to the foot, than by the mode in common use. The fifth division will relate to the rearing the young Colt and his foot to the greatest beauty and perfection, for service ; a department hitherto but little, we believe, attended to or thought of.

This cruel art of ironing horses' feet, under the name of shoeing, has been for very many ages cruelly conducted in a state of the greatest obscurity and barbarity, from the want of its true principles being understood, and without much regard to the obvious sufferings of the poor animal ; glossing the matter over, and accounting for it in every way but the true one ; and leading also to the most unjustifiable measures in biting him with iron levers, which instead of being instruments of guidance, as they pretend and ought to be, have been made into instruments of torture, and which are now all the fashion : nor would such be at all necessary if their feet were in right order and not suffering.

The overawing manners of the votaries of the turf, where the deepest knowledge was supposed to obtain, has also intimidated the more circumspect and reflecting part of mankind from daring to think on so abstruse a subject—a school, however, from which nothing profitable in enlightening this art has ever yet arisen ; and had these votaries of the turf known more of the real nature of the shoeing, they would early have perceived a truth of no small moment in conducting their affairs ; *viz.* how very uncertain must be all their bettings, and how insecure all opinions formed from a physical view or consideration of the animal whilst his performance was subjected to the uncertain and incalculable control and effects of an art so pernicious and precarious as this of the shoeing is now proved to be.

Much opposition also has attended the little advances which this art has lately received, and which may be owing to its having proceeded from a quarter it was not looked for from ; as light that breaks in from an unexpected part of a building is not so well received as when it comes—which, in human affairs, it rarely does—from openings formed for its admission, or where expectation looks for it. Had it come from Newmarket, its reception would probably have been very different. It was also generally imagined that, by some knack or device in the shoeing, all horses should be made to go universally well, and that the perfection of shoeing would consist in the disclosure of this trick ; unwelcome, therefore, would be the intelligence, that in the very principle of common shoeing there was a grievous defect that was the cause of the bad going, and which also must be removed, as the only sure road to certain and general improvement.

I am led to believe that there is about to spread itself, and at no distant period, a more simple way of viewing these affairs of horses, and which will be understood by all, and greatly to the public advantage, and relief of the poor suffering animal; and that his services also will be more gratefully felt and acknowledged, and he will be brought into more extensive use, and his life also be protracted to a much longer period; in greater comfort and freedom from violence; and that the simplicity of his management will then be universally admitted. For no animal can be more tractable or willing in performing his proper duties and labour than he is, when entirely free from pain and persecuting restraints, and the destructive artifices which so continually beset him, and which also beget vices and the most mischievous results.

Some persons have been led to apprehend, that as the modern shoe was proved to be an injurious mode of defence, and very defective, that it was the design of the author that all horses should go entirely without defence—at least they chose to put such a construction upon it; an idea never entertained by him, but, on the contrary, he believes that the defence of the foot of the horse, when done upon good and sound principles, will afford, to all posterity, an useful branch of profit to the industrious mechanic so occupied, as the making of human shoes does at present, and is likely long to continue so to do.

*On the making of the common Horse-shoe.*

The forge of the smith for this purpose should be provided with iron, in bars of various thickness, that he may, by selecting such as come nearest to the size and strength required, fit the foot with as little labour and loss of fuel as possible: at other times also, economy renders it expedient to form them out of the old shoes, both of which processes we shall succinctly describe.

Whether the present mode of shoeing shall be continued hereafter, or shall give way to improvements more congenial to the character of the foot, it is essential in a treatise on the art, that the actual mode of its present performance should be described; and though slight differences will prevail in different places and by different workmen, yet the general manner of doing it will be nearly the same.

It also is a great convenience to have a large assortment of shoes ready made, either hanging to view upon the walls, or disposed on bars, horizontally placed in a recess or magazine, the great advantages of which I long experienced as being more easy for the selection of the shoes, and they are more readily removed than when placed upon one another, as we often see them round a perpendicular bar of iron.



In forging the shoe from the bar, a piece is to be cut off somewhat shorter than the intended shoe, to allow for extension under the hammer, and that there may be as little waste as possible by cuttings from the heels when the shoe is finished. And two or three of these pieces may be placed in the fire at one time to save fuel. With saddle-horses, however, it is an expeditious, as well as more correct method, to divide or cut the bar into pieces or lengths forming pairs, according to the sizes required. The iron for these shoes not being very stout, there is no difficulty in turning it in the tongs over the bick with the *hand-hammer*,\* but with the heavier cart-horse shoes, it is usual not to cut it from the bar till a circular figure is given it, for which the bar itself serves as a powerful and convenient handle. Some, however, prefer cutting the cart-horse iron into equal lengths first, as we have just described, and then bending these pieces, by placing one end upon the anvil, and resting the other against the head of the sledge-hammer, bending it by a few blows of the hand-hammer, which thus gives to all the shoes an equal weight and size. The iron having received the requisite curve is then cut off, and is termed a mould.

It is usual for the workmen to finish the outer limb of the shoe first, which being roughly formed, and the web† thinned, and hollowed out, is commonly reversed by the smith, that is, the hammered side is brought to the anvil; and that which was before next the anvil, being more smooth and uniform in its surface, and of better appearance.

The shoe, or rather the outer limb of it, is then fullered,‡ that is, a deep groove or channel is driven round it, at a small distance from the outer edge, indenting it more than half through the thickness of the iron. The fullering is useful on several accounts; as, preparing it for the nails, as the pritchel|| can then pass through the iron without much difficulty: it also renders the shoe somewhat

\* Perhaps from the sledge-hammer requiring both hands to use it: the hand-hammer, one only.

† Probably acquired from the weaving business, when the transverse accession of threads becomes the weft web or width of the stuff. Hence all within the resting-place of the hoof is called the web of the shoe.

‡ This also appears a term derived from the weaving business, being a tool run over the cloth to finish its good appearance. Here, however, it is a sort of chisel, about four inches long and two wide, flat and almost concave on one side and very convex and rounded on the other, and circular below on its cutting edge. It is generally used in a rod of hazle, the flat side to the interior of the shoe, and the convex side to the exterior: it is hastily driven along the limb, deeply indenting it, and forming a channel at a suitable distance from its exterior edge.

|| The pritchel is a shaft of iron, steeled at the end, and drawn out to a fine square point. To pritch the shoe, in technical language, is to perforate it.



wider without adding to its weight, and gives it a much more agreeable, and lighter appearance. The hind shoes, even for saddle-horses, are not often fullered; at least, only on the sides and for a short distance; nor are the cart-horse shoes either fore or hind.

In France and Spain they do not fuller any of their shoes, even for nag-horses, but a stout square stamp is driven deep into the web of the shoe, and the perforation is then completed by the finer point of the pritchel. The fullering has this advantage also; that the holes for the nails can be made nearer to the outer rim of the shoe, rendering the work *finer*, to use a phrase of art, opposed to *coarse*; as they say of a shoe whose perforations are far within the rim. The French shoes therefore are stamped very coarse by necessity, as there would be danger of bursting the iron out with their coarse tool if applied near to the outer margin of the shoe. It is apprehended also, that the fullering gives to the doorman more latitude in inserting or pitching, as also in driving his nails; and with us in England they are brought out higher up the hoof than in France and Spain, who drive their nails more obliquely and suddenly outward.

The outer limb being finished, *the inner limb* is next formed, somewhat narrower and finer than the other, that is straighter, and less projecting in the middle exteriorly, the nail-holes also are more carefully brought nearer to the exterior edge, and are made smaller, especially the last, and not so far back, or near to the inflexures, as in the outer limb; and generally with four holes only, instead of five, the number usually given to the outer limb. The inside quarter of the horse's hoof is very often bent and curved inwards about its middle height; whereas the outer is quite straight, or frequently somewhat bulging exteriorly, at this part, and requiring less care in driving the nails, and distinguishing easily the feet whether off or near.

In forming the nail-holes, attention must be paid to the direction or sloping of the hoof, as those nearest the toe or front of the shoe should be made strongly sloping backwards, agreeably to the figure of the hoof at this part, whilst those on the sides or quarters of the hoof should be more upright, otherwise it must be obvious the nail cannot be inserted in the hoof without bending in the hole to accommodate this difference of direction.

In the next place, the *pritchel bumps and burs\** in the iron about the holes, are to be knocked down: these arise from the distension and swelling of the metal by the entrance of the pritchel, and are seen upon the outside of the rim of the shoe, and also on its upper surface. This is done upon the anvil-bick, by chasing the

\* *Burs* are splinters about the edges of the holes.

shoe round it with the hammer. The burs also should be forced down, as they endanger coming in contact with the sole, or *vein* as the smiths call it, which is running round it: lameness from this cause I have sometimes been witness to, and on the removal of these roughnesses the horses have gone well again.

*The hind Shoe*, we may remark, though in many respects the same as the fore, is nevertheless of a very different character as to its form, being made much thicker and more solid at the toe, and straighter on the sides, and smaller and narrower at the heels or extremities, and in a general way is not fullered: in this the natural figure of the foot seems with propriety, to be consulted and attended to, for it has been seen in our preceding work, (*Hippodonomia*.) that the fore feet are broader, flatter, and more elastic, for the repose of the chief weight of the animal; whilst the hind are made stiffer, more upright, and less yielding in order to the impelling the great mass of the body in swift action. The hind hoof is therefore proportionably thicker at the quarters than the fore hoof. See Part i. p. 32. The toe however should not be made too thick and clumsy, which it often is, nor the quarters too narrow and thin, for reasons often urged before. The extremities or heels are generally with calkins, and evidently with advantage, more so even than with the fore feet.

*Form of the Shoe.* The surfaces also of the web of the shoe, will admit of great variety of form, but which do not at all constitute a change of principle, as has been vulgarly apprehended: it is the mode only of figuring the ring that is changed, the principle remaining the same. On the whole, those made concave next the foot or opposite the sole, and flat below, to the ground, are with good reason preferred by the soundest and most experienced writers on this subject. However, a shoe such as is commonly made, with the web and whole upper surface with a gentle inclination inwards, is as good and useful a shoe as any, and has this great recommendation belonging to it, that it is the most readily made. The former, or seated shoe, can be made rather lighter perhaps, but its flat, level, upper surface, where it receives the hoof, is not so good, we believe, as a very gentle inclination or slope of this part, as by its flatness it is more liable to split the hoof, and to carry oppressive bearing towards the vein and sole. So that if we use the seated shoe, we always bevel the seating of it, though in a truly slight and moderate degree.

The above concavity is useful in admitting the play of the sole, and in permitting the free use of the picker, and letting out again all dirt or stones that may get in. Many not aware of this play of the sole, think it safe if the shoe does not touch this part; but this is not enough, there should be plenty of room.



The shoe is now in a state to be presented to the foot, being made perfectly flat. The French, however, and so do the Spaniards, give it a curved figure downwards in the middle, elevating a little the toe and heels; which is certainly more comfortable to the natural worn foot, and causes a primary pressure at the quarters on the ground. There is this difficulty, however, attends it, that if the flat form be once departed from, it is not so easy afterwards accurately to fit the shoe to the foot. Long practice may render this somewhat easier; but we believe that the difficulty will more than outweigh any advantage derived from it, for which reason we prefer the simple flat form.

And the French, (formerly at least,) used not only to cup or concave the shoe, upwards like the interior of a bowl, but they also beat up the iron all round the outer rim, perhaps to assist the nails in holding on the shoe; and with a notion also of thereby preventing the hoof from splintering. Formerly, their horses were supposed to go with more safety and freedom than ours, and which, I believe, was well founded; now, I am sure from much observation, it is otherwise. This arises from two causes; first, that they have departed very much from their old method of shoeing; and, secondly, that their horses have much more of the Arab blood now than formerly, with hoofs finer and not so coarse, which makes them feel it more. But another reason was the great width of their shoes, and the comparatively thin small shanks of their nails, suddenly rising from a large round or square head, nothing but the shank entering the hoof; and then from the head having perhaps a very slight power of motion in the hole of the shoe, instead of fitting it tight, as with the square countersink long-headed nails with us. They also, at this time, did not much cut and slice the frog away, or sole of the foot; and knew not at all the use of that destructive tool, the *drawing knife*. Now the reverse of all this is seen, and the furch is more cruelly cut, and the hoof rasped, than in any other country. Their shoes were turned down also lightly at both heels or extremities, forming their *crampons*, which much eases the foot, and gives it advantages by throwing it upon the more solid toe. A wide web to the shoe, is, I am thoroughly convinced, of more utility than is generally apprehended: in confirmation of the truth of this, I well remember, in the first institution of a Veterinary College in England, Professor Coleman maintaining the doctrine, that the only use of the shoe was to protect the wall from wear, and being splintered by the stones of the road, and he actually ordered, upon this principle, all the shoes to be made as narrow as possible, and in fact very little wider than the wall; and so they were all made. And I now record the result, that it may never be done again, for all the horses so shod went so crippling and tender, that it



occasioned an universal cry out against the College, and the subscribers' Horses were continually sent back to have their shoes changed. At the time, I did not see why this should be, but, on reflection since, was brought to see that a broad web is a broad support; and the more points or bearing surface the weight becomes distributed over, the more easy it is to the animal; and also, that the pressure comes as it were from a distance, and is not, where there is a broad web, so direct a bearing. So that now nothing is more clear to my feelings and understanding, and confirmed also by much experience, than that the web is of indispensable utility to the easy carriage and comfort of the horse; besides the protection it affords to the sole, and to the but too often maimed and mangled furch, robbed nearly of all the thickness of its horn.

*Of Calkins.* Convinced also of their great utility—for they have been, by the French colleges, very much condemned of late—I cannot forbear a few remarks upon them, in supporting their claims for being again employed. I am satisfied it is their abuse that has occasioned their condemnation; and what is there that cannot be abused? If made too long or too sharp, especially if the horse be imprudently used with the reins, they may be dangerous to the opposite coronet; but formed in moderation, and the horse used steadily, they are attended, I am satisfied, with very many advantages. They should be coarse and stoutish, but not clumsy, and, as much as possible, formed to do no mischief, nor giving too much elevation to the inflexions. I once entertained strong prejudices against calkins, but having many years ago ordered calkins for my riding-horse, in a time of severe frost, I found my horse to go so much better than he was used to do, that, on returning again to common shoes on the breaking up of the frost, and finding that he by no means went so well, I resolved to try if it was the calkins, and ordered them again, and which, proving advantageous, I never quitted the use of them after, nor had I ever any accident with them. In France I also recommended them, and they were tried, and by prejudiced people, who admitted, however, their advantages; and, for an account of which, see *Journal pratique Veterinaire* for April, 1829, where the admission is candidly made.

I am satisfied also that thin-heeled shoes are ever a disadvantage to a horse, and that when calkins are not used, the shoe should be always level, or with the heels rather stouter: the latter is indeed objectionable as it is generally performed, since it makes the shoe heavy behind, where it should rather be light; whereas a simple turn down of the extremity adds nothing hardly to the weight of this part, and gives the requisite elevation of the foot. I also knew a gentleman in London who was so perfectly satisfied of the advantages of a calkined

shoe, that he never after returned to the common shoe again, by any reasoning the smiths could urge; for calkins are a little additional trouble to the smiths, though not at all so much so as to make it an object. For the figure of the calkins I propose, see *The Unilateral Shoe*, Pl. vi. *Work on Expansion Shoes*.

If we reasoned upon its effects, we should say—In the first place it gives to the foot an elevation behind, which at once relieves the back sinews, and sets them at ease, as in our own shoes. It also gives to the foot a more solid and steady bearing on the ground, and prevents its sliding about, which is a great relief; and also thus renders it less liable to distress and fatigue. In the next place, it throws the interior foot and its bone towards the front of the hoof, its deepest and strongest part, which not having suffered by the shoeing, cannot but be felt advantageously. In the next place, it protects the frog and sole from so much battering against the ground, or upon loose bodies of the road. In the stables also it relieves them very much from the ill effects of the sloping stalls. In short, that these parts should be rather elevated than depressed, must be self-evident, from every man's own feelings and experience. If danger is apprehended, let them convolute the calkin, as seen in the description of the expansive shoe, Pl. vi. Fig. 3.

In this place also I would wish now to advert to another circumstance, which I consider of some importance in shoeing, and not much treated of or understood; and that is, the *fine nailing*, as it is called; or the placing the nails near to the exterior rim of the shoe, by which every one sees obviously there will be less danger of pricking the horse than when they are more inwardly placed; and this obvious and simple proposition captivates the understanding of those who have not gone far into the consideration of these subjects, but is, in our opinion a circumstance not to be attended to so earnestly, but the very opposite, if fully understood, will convey more advantages; that is, the holeing of the shoe rather coarsely. In this case, the holes must be applied properly and regularly to the wall of the hoof, and then will the rim of the shoe stand out and project a little beyond the edge of the hoof, or be *debordé*, as the French would express it. The advantages are these, that you get a wider shoe and a wider bearing surface, which within due restrictions, is always an advantage, and makes the horse go better and easier to himself, for the reasons above given; and, where the foot is contracted, by thus restoring to him the quantum of surface he has lost, or would have had had no contraction taken place, is a great advantage for him indeed. But then it will be immediately objected, that if you make the shoe project beyond the hoof, you will be liable to make the horse cut; and with the common shoe, which benumbs and stuns the foot, this may be sometimes true, but not commonly so, or in a general



way, and with the *Expansion Shoe* or the *Unilateral Shoe*, both of which preserves a motion to the foot, there is not the least danger whatever of this ever being the case, and which a thousand cases or trials has fully proved to me. And as one or the other of these shoes will ere long generally prevail, we believe this hint of rendering them more pleasant to the horse will not be without an extensive use and application, even if common shoes are used.

In the formation and finishing of the shoe, we now advert to another incidental advantage, as it were, that can be taken; and that is, not to make the shoe press hard on the hoof behind, for in that way the posterior points of the sole get bruised, and corns as they are foolishly called, are occasioned; since the shoe should be relieved, or rest as lightly on these parts as possible, by the heels being the thickness of a fine shaving or two, turned down and away from the general plane of bearing of the shoe, especially the inner heel, which, from being lower in the foot, or fuller, is more exposed to this injury.

We have remarked, in the course of our riding, that if there was any undue pressure upon the inflexural parts of the foot, the fetlocks would swell; whether the horse uses more exertion by the fetlocks, to throw the weight there to ease his feet, I know not, or what the exact explanation may be. I once experienced a remarkable case of this kind, a detail of which may not be without its use here, as it often happens a horse is uneasy, goes unpleasantly, and the rider is not at all in a condition, perhaps, to find out the cause of this, or to help himself.

This case happened to me in a ride from London to Bristol, and as it was carefully noted, it may be useful in teaching us the appearances or symptoms which attend a horse oppressed in this way, by a too strong pressure laid on the inflections, which, without producing actual and downright lameness, is enough to make a journey disagreeable, and travelling very unpleasant.

My mare had been shod that very morning in the neighbourhood of Leicester Square, and on leaving London, I could not but remark, that she stepped with a much shorter step than she was used to do, and showed an evident oppression, uneasiness, and saving of the action of the shoulders, and nearly every step she made was accompanied with a pull downwards of the head, and a leaning strongly against the bits; and so uniform and frequent was this, that it became truly troublesome and annoying. The frequency and uniformity of it led me to suspect it was something connected with the feet, and that the shoe was concerned in it. I had known, from former experience, that too much pressure of the shoe posteriorly upon the foot, would produce somewhat similar effects, so I determined, on my arrival at Turnham Green, to call at a smith's, and get the shoes taken off,



and which was done, and the heel was with the hammer knocked a little downwards, so as to rest less forcibly against the inflexural columns; this done, it was put on again, and a perfect remedy it proved, for she went as light in hand the whole journey as I could desire: and I made a memorandum of it at the time, and thought this record of it might not be without its use.

The heels or extremities of the shoe, are usually made beviling inwards, in accordance with its general surface, and very properly, as this prevents any possibility of contact with the bar or inflexion itself, and lodgement of any kind from the road.

Another great relief and advantage in the shoeing which we have discovered of late years, is the using two clips in front of the shoe, which, embracing the hoof, renders the shoe very much more firm, with fewer nails, and especially beneficial, by receiving the strong pitches and throws of the hoof in its meeting the ground; preventing also, most effectually, the shoe from being forced backwards, the way in which it is most usually loosened. We first recommended this in the expansive shoes, see *Descrip. Expansion Shoe*, Pl. 2, 3; and afterwards, we especially recommended them to the *Unilateral Shoe*, see Pl. vi. Fig. 2, and now we recommend them to all shoes whatever. To make them conveniently, a proper tool is necessary, the one figured at Pl. v. Fig. 3, having four sharp corners to bring them out upon; being stuck in the hole of the anvil, is what we at present recommend. These clips are also useful in keeping the shoe in its place whilst the first nails are driven in, which are very apt, especially if front nails, to draw the shoe back from its place, and the foot gets bruised, and the nails often bent, in bringing it back again to its place by violent hammering.

As to the figure of the web of the shoe, if it does not touch or too nearly approach the sole, any form is admissible; but the plano-concave, we believe, unites the most advantages—the plane to the ground, the concave to the foot. We apprehend, however, a surface gently inclining inwards, every where from the exterior rim, to be as good as any, and the most easily accomplished.

As to the thickness of the shoe, it should be always strong enough to maintain its form to the very last of its wear. It should be nearly of equal thickness throughout, perhaps rather thicker at the heels, if the horse is not subject to clack, in which case it should be made rather thinner, in order to the foot being taken from the ground quicker; but a turn down of the metal is better for raising the shoe behind than thickening the metal along the quarter, which is a waste of iron and a useless load to the horse.

How often it happens that what appears plain and solid reasoning, *a priori*, is

found perfectly futile and useless in actual practice; on the other hand, how often are pleasant effects produced from causes we should have little suspected. This I mention in order that we should not, in the pride of reasoning, lean too confidently upon it. And equally we see men of uninstructed minds turn away from things which their reason could not embrace, and revert again to old practices, though always in the end experiencing their ill effects. This I am induced to mention, to encourage a disposition to receive charitably, and with good purpose, such improvements as have been tried and approved by experienced persons. For it is true that for centuries a strange fear and mysteriousness has prevailed over this art of shoeing, which one single, solitary principle, that of the elasticity of the foot, is soon likely to dissipate; and which appears as necessary to be understood by the shoer, as the alphabet by the man of letters, or the gamut by the musician.

To render this description more complete, of making the shoe, we shall here briefly enumerate the different kinds now in general use, with figures of them, and the views and intentions of their proposers, adding thereunto our own remarks. Observing, that this circle or band of iron, called a shoe, will admit of endless variety in its form, and the figure given to its surfaces, and the quantity of material employed of length and of breadth, &c.; and which differences have been often strangely mistaken and dignified with the appellation of “different principles of shoeing,” though it is evident the very same principle pervades them all; for however varied, if it has no motion, it is still the same inflexible iron ring, bound to the foot by nails, driven somewhat diagonally through the lower parts of the hoof, and more or less restraining its movements. Caprice may vary these circumstances without end, and the principle be not at all affected by it; observing only in doing it this one essential condition, that the iron touch not or approach too near the sole. This apprehension of a difference of principle in these changes has tended strangely to confuse and bewilder the subject.

*In working up old Shoes*, or such as have been worn out, one and the half of another usually serves to make a new shoe, the half is laid on one side of the entire shoe, which is then turned or lapped over it, and they are welded into one mass, the middle of the quarter of the old shoe forming the toe of the new shoe. The hind shoes are in general thus made of the old shoes, not requiring the same regular and neat work as the fore shoes.

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*The Racing or Plate-Shoe*, is a thin ring of iron, just wide enough to defend the wall of the hoof and carry the perforations for the nails, and with the hind



feet it is made to extend only a little beyond the middle of the hoof; and this kind of shoe is usually deeply fullered. See Pl. i. Fig. 7.

It is clear that this shoe, from its very narrow bearing, must be one of the most uneasy a horse can possibly receive: every property is sacrificed for lightness only. We refer our readers for proof of the inconveniences of this shoe to Coleman's Experiment with narrow Shoes, before related; and are well satisfied that one made light, but of wider surface, would enable the horse to perform much better; and again, if made of spring steel and on an expansive principle, would possess still greater advantages, by easing the exertions and performance of the horse.

*The Common or Ordinary Shoe*, is a flattened ring, possessing much greater width than the former shoe, and made thicker and heavier also, with a general bevelled upper surface, and flat below, to the ground. See Pl. i. Fig. 1, where the upper and under side of this shoe are both exhibited.

It appears to combine with the least trouble in the making all the best requisites of an ordinary shoe.

There have been many other varieties of these shoes, for they are indeed almost endless, and some of which have been tried in actual practice, but have soon given way again to the ordinary or common shoe, which we believe, for a motionless shoe, combines as many advantages as any of them. The bevilling, or sloping its upper surface, so much complained of as the cause of contraction of the foot, does not appear really of so much consequence as has been apprehended, unless carried to a greater excess than is usual; and for this reason, that the nails passing firmly into and through the hoof, renders this part so fixed to the shoe, that it cannot move, or be drawn down this bevilled surface so as to compress the hoof by this means, in the way that has been generally imagined; for unless the outer shell of the hoof burst or extend to permit this descent, it cannot take place at any rate at the quarters, and though the inflexions may play a little on the surface of such a shoe at the very extremities, it is truly inconsiderable on account of the rigid, fixed condition, in which the quarters are held.

*The seated Shoe*. A shoe rather wider than the last, or broader in the web, perfectly flat below, or next the ground, and also flat above where the wall of the hoof rests upon it, but with the rest of its width or web concaved, is a shoe recommended formerly by some of our best writers on this subject, as James Clarke of Edinburgh, William Moorcroft of London, Osmer, Taplin, and others, and more antiently by Blundville. The difficulty of making it however, appears to more than compensate its advantages, and occasions it to be not much used. See Fig. 2, upper and under side.



*St. Bel's Shoe.* A shoe concave below or next the ground, in imitation of the natural hoof, and flat on its upper surface, was the shoe strongly urged by St. Bel, the first professor of the Veterinary College, in his Treatise on Shoeing, and was constantly, or at least for some time, used in the first establishment of that institution, but was found so uneasy, that it was discontinued. Pl. i. Fig. 3. It has not unfrequently happened, and St. Bel is an instance of it, that a man takes very partial views of some one property in the shoe, and overrating and magnifying its importance neglects others of as much or more moment. St. Bel used to insist strongly on the imitation of the natural figure of the foot in the shoe and the firm bearing of the shoe on the ground, and this concave figure certainly afforded a firm bearing by the outside projecting edge, but this by wear soon became rounded, and then afforded the most slippery, partial, and worst bearing possible. St. Bel also strongly inveighed upon the natural concave figure of the horse's foot and the necessity of giving to the shoe a correspondent form of concavity below, forgetting how soon the shoe would lose this figure by wear, and that the concavity that was necessary for the retirement of the living sensitive part, the sole, was not at all necessary to be observed in an artificial shoe made of iron.

Also, the upper surface of this shoe being flat, did not relieve the sole so well or discharge the dirt so easily as a shoe concave in this part would do.

*The French Shoe* is usually made without fullering, the heads of the nails being received into a large square hole or countersink, with which the shoe before its perforation is deeply stampt; these holes admit of nails with larger heads than ours, which are sometimes square and sometimes globous and angular exteriorly, not oblong. The holes of these shoes are often placed round the front or pince, and they are situated much more inwardly or distant from the external rim of the shoe than in ours, and which makes it necessary for the smith in nailing to pitch or direct his nail more obliquely and suddenly outward, which brings them out sooner, and not so high up the hoof as in ours, and which is so much aimed at by our English smiths as a perfection. The last hole is generally made less than the others. And formerly the nail holes did not at all approach towards the extremities of the shoe, but of late years I was sorry to see the holes brought almost to the column of inflexion, and sadly harassing the foot.

These shoes are convexo-concave, or concave above, with a corresponding convexity below, as in a bowl, of which the seating or resting-place of the hoof is part, as in our common cart-horse shoes. The iron is thickest at the pince, and thinned away very gradually to the extremities, where it is only about half the thickness

of the front parts; and these shoes are rather bending downwards about the middle of the quarters, being somewhat lower there than at the toe and heels.

Such were the shoes we observed when travelling more than thirty years back upon the Continent, and this description is more particularly taken from the shoes actually taken off the Marquis Cornwallis's horses on his return from Paris after an unsuccessful attempt at negotiating a peace with Buonaparte about the year 1809. See Pl. i. Fig. 4, upper and under side, and a lateral view.

Whereas the modern French shoe, or at least the shoe we saw in use in many of the first shoeing forges of the metropolis, (this was in the year 1828, during my residence there of ten months,) consisted of a mere flattened bar of iron, not very wide, made lower and thinner posteriorly, and perforated often almost to its extremities; the iron rarely extending to the inflexions of the foot, but kept short of them, for the fear of corns as they expressed it, and with this shoe the horses in general were going miserably. And rendered dangerous no doubt by such shoeing, they endeavoured in a most shameful manner to keep them up by the severest and most cruel biting, the reins being often affixed to the end of the long branches of the curb, and sometimes even the bearing rein was put on the stretch to the same parts!

*The low heeled Shoe of Lafosse*, See Pl. i. Fig 5, was intended to carry severe pressure to the posteriors of the foot and frog especially, and the absurdity of which has been elsewhere exhibited. The heels or extremities extending only to the quarters, are directed to be three times thinner than the toe or pince. *Essai sur la Ferrure*, p. 81. I have known these shoes used with tolerable satisfaction, and the open state of the foot to have been preserved by them much better than by the common shoe. The great objection to them however is, the very unnatural tread which they give to the foot by elevating the toe and lowering the heels, throwing him too strongly upon the inflexions of the foot and furch, thereby creating pain and inflammation from the battering of these parts upon the ground, especially sensible in long journies. and causing also a continued unnatural extension of the back sinews, and uneasiness and strains of these parts.

*The Bar Shoe*, See Pl. i. Fig. 8, is a still farther extension of the iron over the foot than in any of the preceding shoes, forming an unbroken circle round the foot, and covering the furch, usefully defending this part after it has been denuded and robbed by the cutting away its natural horn, and when it is wasted, shrunk, and hardened by these measures and by the shoeing, which makes this shoe especially serviceable in old feet, by protecting these injured and tender parts from battery upon the road, and contributing by a more wide and extensive bearing surface upon the ground to the ease of the animal, so that some old horses can



hardly go without them, and from experiencing this they have been by some proposed for every kind of horse as the best shoe.

*The Lunette or Crescent Shoe*, like Lafosse's, extends only half way over the foot; and the *Three-Quarter Shoe* only a little farther, and are subject to the same objections; and still less again in its extent, is *The Clip*. See Pl. i. Fig. 6, which covers only the very point of the toe or pince, and which is generally made of iron, but we recommend it to be made of steel, as it then can be made lighter and wear longer without disturbing so much, as the thicker iron would do, the natural bearing of the foot on the ground, for the great defect of a partial defence of this sort is, that it throws the horse upon his furch and inflexions, his weakest parts, and which soon become sore from such unnatural labours. The tip is held on by three or at most four nails, and which we advise to be aided by the two clips turned up against the foot in front, as observable in the figure.

We must however not omit here, *Frost Shoes*. As roughing the shoes for frost is a comparatively easy matter, and may be accomplished in many ways, so, much ingenuity has been often exhibited upon this subject. Two or four points of steel, screwed into the web of the shoe, is a very favourite suggestion of this sort, and is called the *American Ice Shoe*. Now to do this, not only must four steel screws be made, but the shoe must be removed and be drilled, tapt, and screwed, in four places with a female screw, all which is about ten times the trouble of simply turning down the ends of the shoe, and when done, answers about half as well; and we have in a particular manner to remark, that horses so turned down, go, as we have before observed, singularly firm and strong on their feet, which we attribute very much to the removal of the furch from too frequent contusion with the ground, and especially also by determining the pressure of the interior foot towards the strongest, least injured, and least suffering part of the front of the hoof.

If two or three nails are withdrawn, and others with larger heads inserted in their place, the heads half projecting out of the holes, they will be found sufficient to prevent slipping, during the ordinary period of a frost, in these countries, or, nails made of steel on purpose, with their heads hardened and tempered, their shanks being left soft, for pointing, would answer still better in point of duration.

We have now noticed all the shoes in general use at this day, that are worth considering, and they are all, as we have before stated, on the same principle, viz. parts or portions of a ring or circle of iron nailed diagonally to the foot, and more or less restraining its natural motion or action.

We now describe a most useful shoe, in order to the making it more generally known: it is, *a Shoe for Corns*, as they are absurdly termed, or bruised heel, hav-



ing one limb much shorter than the other. See Pl. i. Fig. 9, the inner extremity being cut off, this is applied to the bruised side of the foot and by its removing the possibility of a renewal of the pressure, they soon get well.

This method I have now practised for more than thirty years with invariable success and satisfaction, and the horse with the shoe so shortened appears to go as well, as far as I have seen, as in shoes of the full length, the rest of the shoe sustaining sufficiently the general elevation of the foot from the ground. This I state to do away a fear and apprehension that the exposure of the parts bruised would be dangerous, which I also entertained on first trying them, but which the actual experiment entirely removed. People are apt however as soon as the corns or bruises are thus removed and grown out, to hasten to shoe again with the long shoe, by the advice of their grooms or the smiths, and so bruise again this tender, intertortional point of the sole, and then to say "Corns are incurable."

For more full information we must refer our readers to our express treatise on this cruel complaint. London, 1822.

To this enumeration may be added, but not as being in use, or recommended by any modern writer on shoeing, but rather as a fanciful proposition of ancient times, *the jointed shoes* of Blundville, and other authors before him of that period. These shoes were not recommended by these writers on account of any property in the foot requiring such a shoe, for they knew of none, but because they could be made to open and shut, to accommodate many feet, and were on this account proposed to be taken to the hunting field, as a resource in case of a lost shoe, that is, if a smith could be found to nail it on, but as this was not the case this shoe had ceased to be recommended or noticed, in modern books on the subject, or only as a futile and silly proposition, till on the elasticity of the foot coming to be discovered, it became an object of important consideration, and is a subject on which we shall have to enlarge hereafter.—We now, having described all the shoes generally proposed, pass to the preparation of the foot for receiving the shoe.

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*On fitting the Shoe to the Foot.* This part of the process admits of discretion in many things, and first, as to the accurate correspondence of the shoe to the general figure of the foot, any bulge in the hoof being imitated in the shoe; but, on the contrary, any deficiency or indent is not necessary to be so scrupulously observed, keeping to the general contour only.

*On paring the Foot.* The foot being too large is seldom so injurious as has been imagined, but a too close trimming is ever a serious evil, and the abominable wholesale proceeding of sword-blade and hammer, should be forbid the forge on

any pretence, as too dangerous to be admitted even in the most intelligent hands. Let the rasp be the only weapon used in the forge for nag-horses at least, which cannot well be very much abused, and the slightest possible use of the drawing knife, which was unknown in France, greatly to her advantage, till of late years. To leave plenty to nail to, is the general law which all can obey, and if the foot has its liberty, its size will never harm; this we know from much experience, and can safely vouch for. And it is not an uncommon thing, as we have stated before, for workmen to declare the foot to be improving under their hands, whilst it is in fact being ruined in the most summary manner.

To prepare the Foot for the Shoe, the wall is reduced by the knife to a proper length and levelled with the rasp; the toe is shortened; loose flakes of exfoliating horn are removed from the sole, and this part thickening from the use of the shoe, requires somewhat to be thinned. The frog should on no account be sliced with the knife, for the horn of this part is never too thick for its defence, and has the power of ever maintaining its proper form, even suffering rags to remain, will do less harm, than admitting on any pretence a departure from this wholesome law.

In paring out the foot, the smith is led by the fresh appearance of the sole to judge when it is cut enough, or by the pressure of his thumb, if he finds it yield to the impression. With sunk and foundered feet, and such as run much to toe, it is prudent to be on the safe side of not paring enough rather than too much, as such feet easily deceive the inexperienced.

It is generally apprehended, that the level of the horse's foot at bottom when prepared for the shoe ought to be the level of the horizon; this does not however appear to be exactly true, for if you keep cutting away the sole till the foot held upwards appears level to the eye, you will arrive at the blood on the inner side before you do on the outer, from the sanguiferous parts being lower on the inside, as we have before stated in describing the hoof. It therefore appears that the foot should be rather higher on the inside and lower on the outside, when placed on the ground consistently with the views of nature. This circumstance of the sole not understood, is the cause of the inside of the foot being so often bruised, and with corns, more frequently than the outside. The sole is also generally hollowed out a little, round the whole circumference of the foot, to prevent the possible risk of a contact with the shoe. To ascertain the bearings of the shoe, it is usual to warm the shoe, hot enough to scorch the horn, and the points of contact are then removed from the foot, by the knife, or beat out of the shoe, or both, till a level, uniform bearing is obtained; a view of this practice has afforded ample opportunity for declaimers unpractised in the art to accuse the smiths of burning the foot, and of at-



tributing the evils they experienced to this cause, which, though it may sometimes be abused, is comparatively of no signification, compared with the evils we have exposed.

*On fastening the Shoe to the Foot.*—The shoe being prepared and properly fitted, passes into the hands of another workman, called the *Doorman*, who holds a subordinate place to the *Fireman* or maker of the shoe, and also receives less wages. He however in making the shoe, strikes to the fireman, acting under his guidance and direction.

The nails for shoeing horses, as they are received from the hands of the manufacturer, are soft, without any point, variously bent, and totally unfit for use, till they have passed through a process, requiring some slight and dexterity, called *Pointing the Nail*; they receive for this purpose a smart hammering from the hand of the doorman, on an upright steel-headed shaft, termed *the Stake*, beginning at the head of the nail and continuing it along the shank on both sides and edges to its extremity, which is then drawn out to a clear point. By this means, the nail is rendered hard and stiff, and its surface smooth and polished. But of as much or more consequence than this, is the figure which the point of the nail is made to receive, for, after it has been drawn to a clear good point, the workman gives it a final stroke, obliquely directed over, or upon, the very extremity of the nail, so as to impart to it the figure of an inclined plane on one side, leaving it perfectly flat on the other. This bevelling of the point of the nail is of the greatest use in driving it, giving it always a tendency to pass out of the hoof, from the bevel being placed next the interior of the hoof, which facilitates the process of shoeing very much; and greatly diminishes the risk of pricking the horse, for the foot being softer within than it is externally, would naturally draw the nail in that direction.

The nail mostly used at present has a long conical square head, with a view of fixing it tight in the shoe; and the pritchel point is directed to be made of the same figure, that it may be the more firmly fixed.\* We are led to apprehend that this extreme fixedness and solidity of the nails is adverse to the ease of the foot, and are disposed to prefer the old nail with a globous obtuse head, abruptly rising from the shank; by which the hoof has some chance of being less restrained, and the shoe as to firmness, will be firm enough on, for every purpose. This nail, we believe, has been sometimes called the *rose-headed nail*. Where the conical nail is used, if the head or neck rather, be very long, part of it is apt to enter the hoof, and distending it, must add considerably to the compression of the interior of the foot, besides rending and splitting the horn.

\* For a figure of this conical-headed nail, see Professor Coleman's Treatise on the Foot and Shoeing, Part I.



The shoe being well fitted, as wide, or a little wider than the hoof, and brought to an equal bearing every where against the wall, is presented by the doorman to the foot, for nailing on; the first nail usually driven, is one near the toe, on the side of the foot next the right hand of the workman, as presenting more commodiously to the hammer; this may draw the shoe out of its place, which is again adjusted by a blow or two of the hammer on the projecting side, bending the nail or forcing the hoof, or both; the second nail is then passed through the hoof on the opposite side, which renders it in a degree fixed; the rest are then driven pretty much indiscriminately, smaller nails are however used near the heels or inflexions, on account of the horn being thinner. The presentation or planting the point of the nail first in the hoof, in order to give it a proper direction for driving, is called by the smiths, *pitching the nail*; this is done with the finger and thumb, and on its being judiciously chosen, the success of driving the nail, it is obvious, will much depend: in giving the first strokes of the hammer, they strike not on the flat part of the head of the nail, but on its exterior edge, and when safe in the hoof, or nearly home upon the flat head, the smith is led to judge by the sound, as also by the resistance the nail makes to the hammer, whether it be in its right course or not, and he aims to bring out the nails as nearly at equal distances as may be, round the hoof, and at equal heights up the hoof, the accuracy of which exhibits the workman: on the first entering of the nail he proceeds with caution; but when the point is felt by the finger, or makes its actual appearance, he strikes more boldly till the head is driven home to the shoe. The nail having passed through the hoof, the shank or extremity of it, is next turned down and bent against the side of the hoof, for safety, that the horse in struggling or suddenly withdrawing his foot, should not tear the clothes or wound the thigh of the workman. In England, it is usual to see the doorman perform the nailing on of the shoe by himself, unless with very heavy draft horses, when he gets assistance; but in France, I observe two are generally occupied with this, one to hold the foot, and another to drive the nails standing behind it; and sometimes I have seen the smith's wife take a part in the labour, by holding up the foot of the horse, while the other nails it on: and in Holland also, I noticed, that the greater number of horses, in order to their being shod behind, were placed in a trevis, and the hind foot was lashed to the post.\*

\* The *English shoeing hammer* is small and long in the head, with the face flat and narrow, and a little inclined, or bevilled, the inclination directed towards the handle, at an angle of about ten degrees. Its *pine* is provided with two long curved claws bending towards the handle for driving the nails. The handle itself thickish, or stiff at least, and straight, not very long.

On the contrary, the *French hammer* is with a head, short and massive, the face very broad, and some-

The nails being driven and turned down, he next proceeds to give them all round a good smart hammering upon the head, to fix them more firmly in the shoe, and by holding the pincers to the shank of the nail, draws the shoe tighter against the hoof; this done, he wrings off the shank or point of the nail, and files the clenches with a rasp to an uniform length, filing away also a little of the hoof that they may lie the more closely. They should not use too much force, as that may draw the sole too strongly against the coffin-bone, and distress, stun, and benumb the sensitive sole. Now, by reversing the situation of his pincers and hammer, and holding the former against the head of the nail, which prevents its return, he beats down the clenches with his hammer, and forces them into the hoof. The clench is in part imbedded in the hoof; but if any part projects, or if there should be any irregularities, they are removed with the rasp, and the process is completed. They then very commonly proceed to rasping away the exterior of the hoof, to renew its surface and give it a fresh appearance, and by which they unwarrantably remove its very necessary cuticular coat; a proceeding that ought always to be dispensed with.

Such is the best account we are enabled to give of these different shoes and of the practice of the art, an art in itself sufficiently simple as we have observed, and easy of attainment. But flagrantly defective in principle, its pernicious effects upon the foot are seen sooner or later according to its strength, or the more or less gross manner in which the practice has been conducted. Of this defect in principle, and what can not be of small import, the real effects of these shoes, will be seen demonstrated in the small treatise entitled *Podophthora*, and should have formed indeed a sixth head or division in the comprehensive view taken of the essential matters at the beginning of this Essay. In which treatise we proceeded to develop the mysterious and ill understood effects of shoeing, by exhibiting the shoe as constantly opposing the natural elastic property of the foot, whence the evils so much complained of. To render the fact demonstrable, and place it beyond mere opinion, I suggested the experiment of taking a succession of casts in plaster of paris from the same foot during a period of six years: these, compared with each other, afforded evidence enough of an annual diminution of volume in the foot. To exhibit more forcibly this train of evil, I divided the

what convex, the *pine* (epine Fr.) consists of two short nearly straight projecting claws. The handle long, and thin, but enlarging towards the extremity. And almost equally opposite are the manners of the men: one stoops and bends intent upon his work, and is of few words: the other tries as much as possible to do his work in an erect posture, is loquacious, discursive, and less intent. The one strikes his nail with great caution, the other buries it nearly half way the first stroke.



process into annual periods, though one unceasing course of mischief, describing to each the effects it produced, till the foot could no longer serve its purposes, and thus showed the real cause of what had been heretofore attributed to abuses of the smiths, or, by the more enlightened, to the want of pressure on the frog. And in conclusion it may not be amiss in this place just to observe, that those who are sincerely desirous of forwarding genuine horse knowledge, will do well in the present state of the art to confine themselves to single objects of research; for great obstruction to knowledge is occasioned by works embracing too much—and by pretended general treatises which at the present are a mere abuse of the public.

I shall now turn my attention to a new and more agreeable subject; with what success, remains to be determined, viz. The consideration of the plans or resources which can be resorted to, for the removal of these evil effects of the Shoe.

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When we consider the invaluable properties combined in this animal, his noble symmetry, his vast bulk, and strength, his wonderful generosity of disposition, which forgives injuries as soon as inflicted, the most unmerited often, and of which he cannot but be sensible, the immense profits which attach to his labours and their indispensable nature, surely no pains or care of ours can, or ought at least, to be a consideration, where an object so glorious and valuable is before us, in order to the rendering his offices as little noxious to him as may be, and which cannot but tend to extend them and also his valuable life.

Once awake to the injurious properties of the common shoe, the sufferings of the animal, almost unseen before, or regarded as a matter of course, now became every where most manifest, and desirous of being instrumental to his relief, I was urged to strong exertions, and engaged myself with almost unremitted labours during a period of four successive years occupied alone with this object.

In the first place, however, anxious to see what could be done without using shoes at all, employing the natural foot, and reflecting that the bullock, a much weightier animal and with weaker hoofs, did nevertheless much useful service without any defence; and reflecting also that the ancients in a general way did not shoe, which has been clearly proved, (see *Dissertation on the knowledge of the Ancients respecting Shoeing*. London, 1831,) and yet accomplished by their armies and in their games such extraordinary feats. From learning also



that at this time the little horses of Jamaica and other parts of the West Indies, were used upon the rocky roads of that region entirely without shoes; and instructed, from the observations of that very entertaining traveller, Dr. Edward Clarke, (*Travels*, vol. ix.) that the little horses in Sweden performed most gaily all their rapid service without defence of any kind, so were we led to institute enquiries and make actual experiments, to determine what degree of relief might be expected from this source, if it only served to emancipate from the trammels of the iron bondage even one class of horses whose very utmost services were not required, it would be something, (for we had also proposed the measure of dividing them into classes, according to the nature of their work,) and defending them accordingly.

Another proposition also soon occurred, which was a shoe that should be easily put on and put off the foot, being without nails, and of which the horse should be divested whenever he was not employed in his labours, leaving the foot in its natural liberty at all other times; nor could I at all see why such a shoe should be impracticable. More than forty kinds, in the space of four years, I contrived, and used many of them in private with considerable satisfaction, but thought them, on the whole, not quite fit objects for general adoption with the public; and from these efforts having become severely painful to me, laid them aside for a shoe of a less perfect kind, viz. a shoe fixed by nails to the foot, but possessing motion, the above being a motionless shoe in itself, but was easily applied and removed again, which two modes appear to embrace the two grand principles on which we must depend for relief. I have given engravings of some of these, that they may stand recorded; and that they may also serve as steps to future enquirers in this line of pursuit, who, by availing themselves of these aids, may arrive at superior excellence.

It occurred also to me, at a very early period of my labours on this object, that a removable shoe of the above description, once fitted to the hoof, might be rendered very durable, or even permanent, by having a second shoe to receive the wear, screwed or rivetted beneath it; that the first expence in making such a shoe would be almost all the expence that would be required, and could be no object in a matter of such consequence, as the saving from ruin the foot of so valuable an animal; the second shoe being renewed at pleasure, at per pound of iron or steel.

I discovered also, another method of defending the foot upon quite a different principle, which might be useful in some cases, where excessive labour was not demanded, or where about double or treble the work more than the natural hoof

would perform was required. For this purpose, I used a cap of steel hardened to the spring temper to defend the wearing line of the hoof, which extends from the toe or front parts of the foot to the middle of the outside quarter of the hoof; this defence was fastened by a brace and strap, and could be applied without nails, by a purchase on the side of the hoof, and which, as I propose to describe farther on, I shall not here enter into further particulars of.

Of late, however, a modification of the common shoe, by nailing it only on one side, has been found the means of relieving thousands of horses from this terrible thralldom of the common shoe, an experiment that would hardly have been proposed by a professional practitioner for a mode of shoeing, from experiencing how difficult sometimes it is to keep shoes on with using all the nails on both sides, nor could we have had hope of acquiescence in such a proposition from the public; but so it is however, that it answers surprisingly, and shows how much we had over-nailed him before. An account of the origin of this attempt will be seen in my work on the foot and shoeing, *Hippodonomy*, p. 58, for in fact it first commenced in the casual essay of a gentleman not of the profession.

I now propose to exhibit the powers of the natural hoof, as it is of primary interest in the use of the horse, and to give the relation of an experiment I made to elucidate that point upon an ordinary English gravel road. As for the ancients, certainly they used their horses without shoes, and constructed roads purposely to accommodate their feet; such were the ancient causeways, formed of large flat stones nicely cemented together, and a little arched to carry off the wet. These roads passed through every country subjected to the Roman power, proceeding in nearly straight lines from the *Forum* of Rome as from a common centre. Post-houses for the purposes of government were erected along these ways at the distance of every five or six miles, each provided with a relay of forty horses. And Gibbon, in his *History of the Decline and Fall of the Roman Empire*, ch. 2. book i. relates an instance of speedy travelling which can be hardly surpassed in modern times with all the advantages of shoes. In giving us a view of the general state of the empire under the Antonines, he is led to notice their roads, and informs us that one *Cæsareus*, a magistrate of high rank, rode post from Antioch to Constantinople in six days, a distance of seven hundred and twenty-five Roman miles, or six hundred and sixty-five British miles, a performance that would be hardly credited of horses without shoes, if the means used were not pointed out, for these frequent relays rendered the accomplishment not difficult, and not attended with much cruel exertion on the part of the animals. In galloping on these large, hard, flat stones, the hollow hoof clanked and re-



sounded again in a way that very naturally suggested to them the epithet *sonipes*\* for the horse, but which it would be difficult for a modern, using iron shoes and gravel roads, to form any adequate notion of. And the horse's hoofs, it may be remarked, would be very little worn, if the surfaces of these stones were kept quite clean, and the joints in good repair.

That it should not longer remain matter of conjecture merely, what a horse could perform with his unprotected hoofs on our ordinary roads, I made numerous experiments with different horses, at first with feet that had been shod, mistaking them for natural feet when their shoes were taken off, as always had heretofore been done; but finding them soon become tender, not from wear so much as from expansion, having been so long locked up and changed by the iron, which we have more fully explained in another work: I therefore was obliged to procure for the experiment a young horse at three years old, that had never been shod, and kept it till four, when I made the following experiment, which is copied from minutes made in the course of the journey.

Ninth of the sixth month (June) 1811, I left London in the evening, for Bath; and rode this young mare without any defence to her feet as far as Brentford that night; the roads were in most places a very deluge of mud, almost fetlock deep, from rains which had fallen several days preceding; she carried me a brisk trot the whole way.

The next morning I left my late esteemed friend JAMES KIDD's house, about eleven o'clock, having first examined the state of her feet, and found them not much worn, and that principally at the toe, or wearing line, the heels not having suffered hardly at all.

With a view to prevent the wet from getting into the horn so easily, as the roads were very dirty, I covered the under surface of the wall and sole with bees' wax, melting it in by the application of a woman's ironing iron, as a substitute or imitation of the bituminous compound, which the ancients appear to have used

\* "Atque tuis primum *sonipes* calcaribus arsit." Claudianus, lib. i.

"Sit tibi præterea *sonipes* Maurusia tellus." Nemesianus, Cyneget. v. 259.

"Insultans *sonipes*, et pressis pugnat habenis." *Æneid*. Lib. xi. l. 600.

And perhaps intended as a contrast to the above sound is the following phrase—"cavatque." "*Tellurem, et solido graviter sonat ungula cornu.*" Georgic. Lib. iii. v. 86. At first it would appear absurd that there should be any sound at all on soft ground, such as the foot could excavate; but on the turf, and at pretty full speed, there is heard a heavy, obtuse, pounding sound, which may be what the poet would wish here to bring to our imagination, in the way of contrast to the foregoiing lighter clattering of the naked hoof upon a causeway.



for the same purpose, and which they called *allium* or *allion*, or mere tar,\* and which, as it was not in any sense a shoe, could not affect materially the inductions of the experiment. Choosing the driest part of the road, I arrived at Maidenhead about two o'clock, for in all my experiments I found it made a very great difference indeed, whether the roads were wet or dry, the foot sliding about in the wet caused the wear to be greatly increased; in coming to the ground, the foot would slide forward, and in leaving the ground backward again, which the dry ground, by retaining the hoof firmly at once, did not occasion; this farther extension of the journey she did without material inconvenience; but her feet by the wetness of the road were rendered very supple, so that their expansion at the heels and quarters was rendered plainly evident to the eye. She also, with nearly every horse I ever possessed, favoured the near leg: this appeared here to arise from an injury done to the point of the shoulder from a kick, or some carelessness or negligence in her bringing up, from gates or doors left half shut, or violence of some kind. The frequency of the near or left limb being affected more than the right, I do not undertake to account for; but notice it as a remarkable fact. I wish to attract people's attention to this object in buying young horses, and put them on their guard, as they are led to suppose from their youth and not having done any work, that they must infallibly be sound, and surrender their understandings too easily on these subjects.

As I had in view, in these experiments, the restoration of my injured health, as well as the experiments themselves, so I often dismounted in the course of the journey, and walked by the side of my horse, to relieve myself, and to observe various things I wished to know. In doing this I was led to remark the natural and unconquerable dislike that horses have to being led by the head; persons ignorant of this, are often offending their horses, and by endeavouring to enforce obedience in what seems so simple a measure, get completely foiled and out of humour, and employ perhaps a good deal of unmerited abuse and punishment; for, the more the horse's head is pulled, the more disposition does he exhibit to run back; the pressure of the headstall upon the foretop is perhaps one cause of this, and also perhaps from its being the very opposite means to what he has been taught to move forward with, and the bits in the mouth acting against the upper, instead of the lower jaw. He soon was taught to follow me, or run agreeably by my side, by keeping always a slack rein, and with a whip behind me in my left

\* "*Boves ne pedes subterant, priusquam in viâ quoquam agas, pice liquidâ cornua infima unguito.*"

Cato, apud Script. Rei rusticæ Ed. Aldi. tom. ii. cap. 73. p. 12.

hand having a lash of some length, with which I could, without his seeing it, reach him behind; this never failed in producing the effect of making him run forward, till he became habituated to it, and then it might be omitted and the word be frequently used instead. In often happens, when men fail in getting the horse along by pulling at the head, that they raise the whip in his face, which has always the effect of increasing the dislike and of making him run backward, in which situation he can have no command of the horse, and unable to do any thing further, is fairly beaten. I mention this little circumstance to the reader, as the knowledge of it may, under some circumstances, render a journey not performed in great haste more agreeable.

I got to Reading that evening, being about forty miles from town, without suffering inconvenience, where I slept; the roads had began the latter part of the day to get dry again. However, the next morning a heavy thunder shower wetted them again, and in going out of Reading on the stones she was not without sensation; the wet occasioning the foot to slide about, increased the wear, and was unfavourable to her. And amusing myself on the road with a slow pace I reached Newbury before two o'clock, and on examining her, found her toe shortened to a degree that made me apprehensive; still she went tolerably well, and without much signs of favouring them, so I proceeded on my journey: the heels I found had suffered very little, which, as being considered more tender parts, one should be led by *a priori* suggestions to be more apprehensive of; indeed, I found from this and many other journeys that I made without shoes, that the toe can be worn to a surprising degree of shortness before much tenderness is felt, and the sole at this part I have also thought is stronger and harder than at any other part of the foot; the wall at the heels or inflections still projected below the sole. Where the ground was very loose and soft, especially if wet, it appeared to be collected by the concavity of the foot, and a pressure and condensation of it seem determined towards the centre of the foot, supporting the animal, and saving the wear of the hoof; from this focus of pressure in the centre of the foot, I have seen the water collected squirt out with considerable vehemence. The bars or inflections will prevent very usefully a too considerable condensation or pressure against the lateral softer parts of the frog in these cases, by their recedence.

On leaving Newbury, after dinner, the sharp flint stones of the street made her feel a little; and after this I noticed, that if she trod on a stone in front of the foot she flinched, otherwise on the soft sandy roads she still went tolerably well, and I kept on with her till we reached Hungerford, often dismounting and walking by her side, for her own as well as my relief. I remained at Hungerford the



night, and examined particularly the state of her feet: the wall was become extremely short at the wearing line, that the sole at that place must have taken the chief pressure. It was in observing this fact, that the wearing line suffered very disproportionately to the other parts of the foot, (which from mere dead pressure did not wear away near so fast,) that I was led to apprehend a defence of this line could be resorted to without the use of nails, which would double or treble the use of the hoof, and enable many to have the gentle exercise that health or amusement only required, and save their horses the persecution which the common method entails, by using a kind of *steel ferril*, which could be held on by embracing the wall on the inside as well as the out, and which being a totally different principle from the shoe, I termed *the Paratrite*, which I shall describe more particularly hereafter.

After washing her feet in cold water to cool and harden them, I left her for the night, and the next morning early, tried her on the road, and found her to go better than on the preceding evening; the weather was become fine, and the roads drier. I reached Froxfield to breakfast, and with some difficulty and great attention to her road got to Marlborough, and thence to Calne to dinner, where, as the horn was now become extremely thin, and the casual pressure of a stone might injure, or perhaps fracture, the coffin-bone, I thought it most prudent to desist from farther pressing the experiment. On the Downs, however, she galloped on the sward without inconvenience, or any particular expression of feeling; no doubt, from the general bearing which the foot would here take upon the soft carpet of the herbage, and the absence of stones from contact with the wearing line.

I left her at Calne and proceeded to Bath, now only nineteen miles from me, by the coach; so that she had performed eighty-eight miles with unprotected hoofs. After three days I returned, and brought her with me to Bath, and used her there for some weeks in various little excursions.

It will be seen therefore that the hoof of the horse, even at four years old, is not so poor a defence as many imagine; for many stable men and smiths are almost frightened at the idea of going from house to house without shoes. Yet, although the natural hoof will do much, it is also a truth, that to obtain the full services of the horse, and all the labour which the strength of his body permits him to give, his hoofs are quite insufficient without protection. Had the weather been fine, and the roads dry, and her hoofs consolidated by a six years' growth, she would have performed, I believe, this journey with ease; for the hoofs of horses appear to thicken and enlarge to the eighth year, if unrestrained; as do also the



other parts of the body furnish to this period. I may take this place to remark that I think I have also distinctly observed another fact in respect to the horse's foot that is worthy of particular notice; that in the autumn of the fifth year of their age, a remarkable cast or exfoliation of the horn of the frog takes place, which is accompanied with a change in its constitution and character; for, after this period, it becomes more contracted in its dimensions, grooved or hollow on the side, harder, and more sharply pointed, which change considerably adds to the beauty, and no doubt also to the use of this part. The smiths, who miserably slice away the horn which covers, protects, and defends this part, do as wisely as one who should cut away the horn of the balls of a dog's foot before his being taken to the field to hunt. Indeed, the public but little know the extent of injury they are suffering from this cause, obstinately persevered in; and now, not so much from ignorance, as a perverseness, which merits severe reprehension, or rather deserves a public act, to forbid it. Knives, aye, very sharp drawing knives indeed, are made in London, and are prodigiously sought after by the journeymen forgers, who think themselves fully equipped with one of these: and a country bumpkin, figuring away with one of these dangerous weapons in his hand, cutting and slashing at the frog and inflexions, will easily do more havoc in two minutes, than in two years the best discretion can ever repair again. Stable servants also have a notion, taught them originally by the smiths, that the horn of this part should be scalped away, and they insist on its being "*well cut out*," thus stepping out of their proper province to do mischief; for it is theirs to feed and clean the horse and look after the stable, but not to interfere in the smith's department, in a matter of such moment. Masters, again, in fear of these men, are often not really masters of their own stable, and dare not oppose them; and a person employed who offends the man is also almost sure to offend and lose the business of his master, that it is tender interfering for those who depend on this business for a livelihood, or wish to be honest in telling them their true interests.

But to return. From the above, and other experiments which I have made to ascertain the powers of the natural foot, I should be of opinion, that a considerable number of horses, whose exercise is hardly more than what is necessary to their own health, or that of their possessor, especially where the roads are found to be sandy, or the green-sward presents abundantly, might go without being shod at all, and escape thereby the various complexity of mischief which this art entails. To those who may be desirous of employing the foot in this natural state, I might just say, that there can be nothing more simple

and easy to manage; for by wear it is soon rounded at the edges, and forms in front an obtuse figure, that cannot easily be torn or splintered. And the wearing line assumes an undulating or waving form, which preserves it from fracture; now this figure appears to be the result of the two motions or situations rather of the limb, viz. in its meeting the ground, and in leaving it, describing a different position in each, as to its being placed before or behind the radius, or rather centre of motion of the lever of the limb, thus producing an undulating line of wear.

The above experiment shows us that the natural hoof is capable of considerable service even under adverse circumstances; and to encourage others I may also state the fact, that I knew an opulent stockbroker of Kingston on Thames, who had a stout mare employed chiefly in cart service, which for twelve years had never been shod. I once examined her feet, and found the wall of prodigious thickness and strength; her frogs were weak, perhaps naturally so. Another gentleman I knew, who employed his horse in the saddle for years without shoes, but this experiment does not answer very well, if the horse has been previously much shod, the foot being very soon changed from its natural properties by the iron. The singular cause of this will be seen in our treatise *on turning horses out to grass without shoes*, at the conclusion of the Podora. Another great advantage which belongs to the natural foot is, that you may ride over every kind of ground, be the surface ever so smooth or sloping, the hoof will retain its hold and not slip—the streets of London, declivities, or the sides of the kennels, or even on flagstones, which are so dangerous to horses shod in the usual way. And the late Lord Morton, who took great delight in horses, and was an excellent manage-rider, in one of his letters addressed me on these subjects, informed me that he was frequently in the habit of riding from his seat of Dalmahoy, a distance of nine miles, to Edinburgh and back, without shoes or any kind of defence.

As to the *paved roads or stones*, as they are often called in London, I have had much experience in riding unshod horses upon them; and find the natural hoof does not suffer in nearly an equal degree on these as it does on a gravel road, as there is nothing in the smooth surface of a stone to rub or wear away the hoof. Their hardness however, is a subject of great complaint, and which has been ignorantly imagined to be productive of numerous evils, and is a constant theme of complaint with servants, and smiths especially; but more, I am satisfied, is attributed to this kind of road than belongs to it even in this respect, and that the tenderness of feet, and blundering manner of going, is not so much the effect of the stones, as of the hardened, benumbed state, and general contraction



of the hoof about the foot, and the formation of ring bones from the too solid and fixed properties of the common shoe; and these evils ought in justice most often to be referred to its defective principle.

The smiths, ever ingenious in finding excuses for these errors in the going of horses, of late have changed their note, and with still greater folly and injustice, accuse the Macadam roads of being the cause of these evils; although the best undoubtedly, at least under the present circumstances of shoeing, that the horses ever had to go upon.

The coating of dirt, which the stones almost unavoidably acquire, covers and usefully takes from them that hardness and slipperiness they otherwise would have, especially when the dirt is moderately dried, and which I believe should to a certain degree rather be permitted than removed, where iron shoes are used. The hard, smooth, and well-compacted causeways of the Romans, on which their horses' feet rung and resounded, were not complained of by them as being too hard for their horses' feet unshod, and their causeways would indeed alone show us at once that they did not shoe, for it is evident these irons would have had no more hold on such a surface than upon the flag-stones of the foot-ways of our London streets, the danger of riding upon which is pretty well understood. Fresh granite being rougher, is more destructive of the hoofs than old stones, and when covered with new gravel, it becomes a very grindstone to the feet, and more destructive even than any gravel road can be. As the roads are at present constituted however, made of loose stones or gravel, it is obvious that some defence is necessary for much use of the horse upon them.

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Having considered the different kinds of nailed shoes, and the probable extent of use of the natural foot unprotected, (pursuing our fourth division on the possible improvements in shoeing,) I now proceed to describe a new kind of defence on a totally different principle, which, if carried into general use, will remove the use of nails altogether, and bring the practice of the defence of the hoof within the limits of a simple domestic process, which the rider himself may perform, or by his servant, and not subject himself to the abuses, conceited ignorance, and often impertinence, of those who are at present occupied with this art, often above all kind of instruction. And till the present race of artificers are removed, there is not much hope of a change: one would desire to see a new business of Stereoply succeed them, and men scattered in towns and villages, who might unaffectedly,

and according to sound sense and good science, undertake to execute their humble calling, really and usefully assisting the equestrian in difficult cases, or on all occasions, whenever aid was needful. I have sometimes thought also whether the heavy horned cattle, in their long journeys from the north to Smithfield might not be defended in a somewhat similar way, and so save them the dreadful sufferings they are often made to undergo, obliged to march on their naked and bleeding feet, upon the very flesh, from the loss of their hoofs, worn through or torn off; for such things are not unfrequently seen on the roads leading to the metropolis; so that it is a remarkable fact, that whilst one poor animal is suffering dreadfully from being overshod, if I may use the expression, the other suffers almost as much from not being shod at all.

The invention alluded to above I have termed the *Paratrite*, from *para*, against, and *tero*, *trivi*, *tritum*, to *rub* or *wear*, being intended to defend the wearing line of the hoof, or any other part it covers from contact with the road, and thus prevent its defrication. I would desire to use this term to do away the delusive word *shoe* as much as possible, and *shoeing*; and by so doing, remove in some degree the slavish and mysterious notions and apprehensions which attach to this abused term when applied to horses.

Its principle is founded upon the circumstance of the wall of the hoof being of a cylindrical form, as explained in our account of the foot; so this defence is made to cover and embrace a portion of its outside, and passing under it, is made by teeth to grip the inside of the wall, and is then secured by a screw through the plate in front, passing transversely into the horn, short of the thickness of the hoof, or otherwise by the aid of a short purchase lever with teeth which is acted upon by a strap passing round the coronet. The lower surface, it is almost needless to say, receives the wear or attrition of the road. See Plate ii. Fig. 1, 2, 3, 4.

The circumstance has been before noticed, that the line of wear extending from the front of the pince to the outside quarter, wears away on the road three times as fast as any other part of the hoof; and the intention of this defence is to protect this line, as the natural hoof is found to fail in this part first, and thus enable it, in light services, to double or treble its natural powers, sufficient for many an useful purpose, and particularly recommended as not requiring the aid of a smith, and this line defended, the rest of the hoof does not wear away so fast.

We may add, that two or more of these shields, and indeed, that a defence on the same principle, may be carried round the hoof.

In the figure given of this defence, the upright part, *a*, which we call *the helmet*, lies in contact with, and is closely fitting, the outer surface of the wall, and the



three claws, *b*, *c*, and *d*, Fig. 2, grapple with the interior of it, passing deeply into the horn of the sole, or between it and the wall, but being short of its thickness, so as not at all to endanger the wounding the foot. It is simply driven on the hoof by means of a hammer, or even a stone, if this should be wanting, and is secured by the screw, *k*, passing laterally into the wall of the hoof, short of its thickness, through the perforation *e* of the helmet; or otherwise by a purchase against the side of the hoof, by a tooth or teeth lodged in a notch in the wall, and secured by a web, thong, or strap, passing round the bulbs and top of the hoof, and if thought necessary, over the coronet also, and is either simple or padded. See Fig. 4.

In a journey made to Bath a few weeks after the one I have before described, I drove on a pair of these paratrites, and then performed the journey with ease in three days, the whole way to Bath. The weather being fine much favoured the experiment, and I took advantage occasionally of the grass and loose sand which presented by the road side. Other examples I might also state of their use. I once rode from Cherril, a village in Wiltshire, near Calne, to London, a distance of more than eighty-six miles, in two days, without any other defence, and with no defence whatever to the hind feet. The weather was particularly fine, and the roads dry and dusty. I was often surprised, in making these experiments, at the comparatively slight degree of wear, which the heels of the hoof, or rather the posterior angles or columns of inflection, suffered. I once drove a hobnail, such as ploughmen use in their shoes, having a broad head and turned down points, by way of assistance to the paratrite, into the solid angular column of the inflection of the hoof, near Marlborough, and I was astonished to find that the hammer markings on the head of this nail were hardly effaced on my arrival at Hyde Park Corner. This I am induced to mention, as it is contrary to general apprehension in respect to the wear of these parts.

As the defended point becomes at last the highest of the hoof, it is well, therefore, after a certain use has been made of it, to take it off, and to let the wear become general, pursuing the wearing till the line of the pince or toe becomes tender, which will be the first to fail, from the unusual degree of use that it takes in the course of progression. If the diagonal point to this wearing line in the column of the inner heel or inflexional column be also defended, the proposition of security will be much advanced I believe, which can be done very simply as stated above.

This thin casing of steel will not materially disturb the natural bearings of the hoof on the ground; and I have found that one of a very moderate thickness will

endure the wear of a hundred miles. There is no objection also to leather being interposed between the paratrite and the hoof, more especially the inferior part of it or rubber, which is next the ground, if it be thought better. I might also hint to those who may manufacture them, that there must be no incongruity or want of harmony in the direction of the teeth, as this will prevent their driving on. Other constructions of the purchase lever are seen at Fig. 6, 7, and 8, with and without a joint to the hook, and one with an adjusting screw. Another mode of attaching them is seen at Fig. 9, by means of a screw; the two claws, *a*, *b*, driven against a notch in the hoof by the screw *d*, will force the piece *e*, against the top of the paratrite *n*, and so draw it on and fix it to the hoof. Another suggestion for preventing the return of the paratrite, after it has been once driven on, is seen at Fig. 10, where the points, *g*, *g*, forced against the hoof by the screw nut, *f*, will oppose the descent of it: not having had time to try it however, I do not vouch for its effect.

Having described the plan, and suggested farther improvements of it, I leave the perfecting it, if found worthy, to more ingenious artificers. The paratrite might, it occurs to us at present, be very well made of the Brampton metal, or malleable cast-iron, as it is called, and perhaps a small flange might then be given it, to serve as a web, and so render it a more extensive defence, and easier also to the foot, the teeth being formed within the limits of the flange; here just stating for their help, that in order to make the dies for impressing the steel accurately to fit the hoof, an impression was first taken in sheet lead, and the steel being made red hot, was reduced to the figure of the hoof, between dies of cast-iron or filed steel, in a strong vice. As no patent has been taken out by me for this invention, it is open to any attempts of the ingenious; and if a number of different figures and sizes were kept ready, a hoof might be soon fitted.

In thus arming the foot, a formidable obstacle presented itself in the obdurate nature of the steel. I record here the machine which, after many trials, I found to answer best for this purpose, and which would cut out of a steel plate an entire paratrite with its teeth at one blow: a thing deemed utterly impracticable by an eminent working artist in this metal. This apparatus was formed of a thick, square piece or plate of wrought-iron cut out in various parts of it in notches passing quite through the metal. In these notches were lodged the chisels of tempered steel, their backs resting firmly against the hard face of the anvil. The steel plates for making the paratriles of, were then heated red hot, and placed upon them, and were cut through by the blow of a heavy hammer, or, which we found



better, by a ram-head descending fifteen or twenty feet between two lofty upright pieces of grooved timber.

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When the oppressive nature of the common shoe became known, many persons touched with commiseration for the sufferings of the poor animals sent me their plans; others desirous of profiting by so important a discovery, secured patents for various shoes, of which I have given some account in the *Podora*, p. 57. Our attempts are most often, in the first place, after the perfect thing, but wearied and defeated in the end of obtaining it, we content ourselves with setting down with the use of some modified arrangement of it only instead. The removeable shoes would certainly be the most perfect shoeing that could be, but, wearied with the difficulties of it, my attention was again called to the common jointed shoe, by the circumstance of my very worthy and learned friend, Dr. Hodgkin, bringing me one ingeniously contrived by him, where the two halves were held together by a sort of dovetail; but as it appeared such a joint would soon be destroyed by the wear, I was obliged to reject it, and while considering it, my attention was again brought to the common jointed shoe, which had first occupied it, but which I had also rejected on a first view, as it was held together only by a simple pin for a rivet, which in a few hours' wear, the joint lying in the very centre of defrication, would probably be worn out, or if only half worn would come asunder, and the two halves be no longer supporting each other. It now however occurred to me that this rapid detrition could be prevented by the substitution of a steel pin for the iron one, or a stout steel rivet rather, and provided with a broad head, which could be made also very obtuse, or quite flat, if required.\*

Fig. 11.

I shortly after had a shoe made after this fashion, which, in the experiment, very much fulfilled by wishes; and further, to secure the front of the shoe from wear, I had a rib of steel let into the shoe, inserted near the rivet; and further to increase resistance to the wear, I placed the rivet on one side of the toe, that is,

\* It might very naturally by some, be imagined, that the sight of such a shoe would suggest the principle of expansion, but such was not the case to me or any one else during the period of near three hundred years they had been seen in books and as curiosities in forges. They would however, first attract attention to supply the defect, on the principle of elastic yielding being discovered; for it is a truth, that a deficiency and want must first ever precede or be felt, before the remedy or the means of satisfying it are sought for.

to the inside of it, the outside being more severely subject to the wear. See Pl. i. Fig. 10, 12, &c.

The public also, long used to bad roads and shoes of great weight and strength, though they paid dearly enough for them, were disposed to disregard all partial helps as of little or no use, though, in many cases, such might have been highly useful, and were ever at this time considering a case of extreme labour, and the worst of roads, as though all horses were used for stage work, or all the roads were of the very worst kind, therefore nothing short of a shoe obviating such difficulties could hope for acceptance, or be received with general favour. The jointed shoe however, described above, is equal to most kinds of work; and another, which I invented since, the *Steel Tablet Shoe of Expansion* is, when well made, capable of as much or more work than any shoe that ever existed, the tablet being entirely of steel, and renewable without renewing the other parts of the shoe. For the management of both these we must refer to the *Description of the Tablet Shoe of Expansion, with Testimonies, and Account of making it, &c. Second Edition. London, 1827.*

Such shoes are now made of Brampton metal, or malleable cast-iron, and extensively applied by my nephew, Charles Clark, of Stamford Street, Blackfriars, most beneficially, and by my friend Isaac Brightwin of Moorfields, to the relief of multitudes of horses. They have been also greatly abused by the smiths sometimes fixing the rivets, sometimes by nailing too close, so that their advantages should not be felt.

The greatest difficulty with them is the lap-joint, which is liable, from the friction of the two flat surfaces, to become too stiff and fixed, for the powers of the hoof to open a shoe are not very great, if the rivet be at all tight, and especially in the hands of those who are unfriendly to them, liable to abuse: to prevent it, we should recommend the leaving these surfaces a little rounding or convex, instead of perfectly flat, either by a touch of the file, or by giving them a blow turned down on a stake inserted in the anvil, having a very superficial or slight depression in it, with a round-faced hammer. Also to work the joint well with grease before the shoe is put on.

This rivet, or nipple for rivetting, is now very commodiously cast with one of these halves, and passing through a hole in the other, is quickly finished, in malleable cast-iron. See Pl. v. *On the Expansion Shoes*, a treatise in fact forming a proper postscript to this work.

It may be seen, in my researches respecting ancient shoeing, that it is not improbable the Roman sock of leather, or hippopodes, became at last defended by



*glantes*, or iron shoes of the figure of an acorn, which in section is nearly the figure of a common shoe; and that one of these, for want of a sock, was probably nailed on by some expert workman to the foot itself, for the first time perhaps in a case of great emergency and distress, and so became the progenitor of the modern shoe. See *Treatise on the Knowledge of the Ancients*, p. 25. And although perhaps no record of the actual fact exists, it appears nevertheless not improbable, that as these iron nailed shoes got more and more into use, the necessity of causeways from this practice became every day less, and imperceptibly and by degrees declined, and at length suffered a total neglect, giving way to roads carelessly formed of loose stones and gravel, a change infinitely to the disadvantage of the horse, and leading also to his more cruel treatment and more rapid destruction, and hardly less so to his rider also, as we see by the almost continual casualties and accidents which accrue from this source; even nobility, with its many advantages, not being exempt, and royalty too, for it is a fact not generally known, that two kings of England, out of about fifty, and two of the most important, came to their deaths prematurely by the falling or stumbling of their horses, viz. William the Conqueror and William the Third.

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#### *On removeable Shoes.*

Let us hope that the thousand years of suffering that by a *small* mistake in the shoeing has been unintentionally inflicted on the horse is at length about to disappear, and truly happy shall I feel, if it shall be considered that my labours, which have been almost unremitted from my first perceiving this error, have at all contributed to so desirable an end; for it was certainly ordained by Him who gave them to us, that in return for their valuable services, they should be treated not only with mercy but with indulgence.

In making shoes to take on and off, or removeable shoes, as I call them, which would be the very perfection of shoeing, there will be found a great difficulty in fastening such securely, on account of the hoof being a cylinder, and not a cone, as has been generally apprehended, (see Professor Coleman's Works, vol. i. p. 42, as indicating the general views on this subject;) for had it been a cone, or much enlarging downwards, the difficulty would certainly have not been very great. I shall now give a brief description of four of these kinds of shoes, as exhibiting several different principles for accomplishing this end. Many of them I used on the

roads as I have before stated, with great satisfaction, and especially for a long time the chain shoe, seen at Fig. 2, Pl. iii. on which I find among my papers the following memorandum, dated "August 28th, 1812. This day I for the first time tried the chain shoe, and found it both easy to the horse, and strong enough to defy any force of the horse to break or loosen it. I had, by gradual approaches, brought this horse, from being very shaking and unpleasant, to be easy to ride, yet the present experiment in this respect exceeded all the others, as he wanted neither the support of the rein, or spur, or whip, to put his feet fairly out, and to move his shoulders to the full extent of their action, which they ought all to do if sound and properly shod.

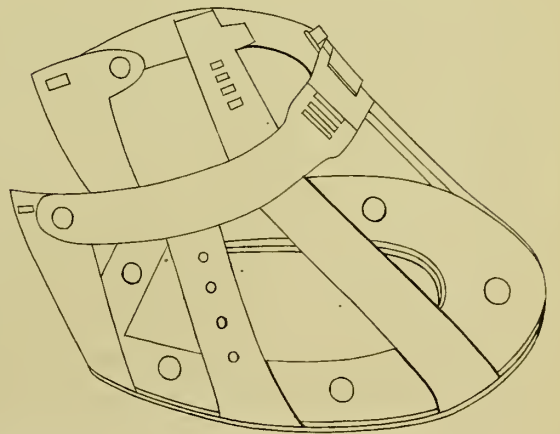
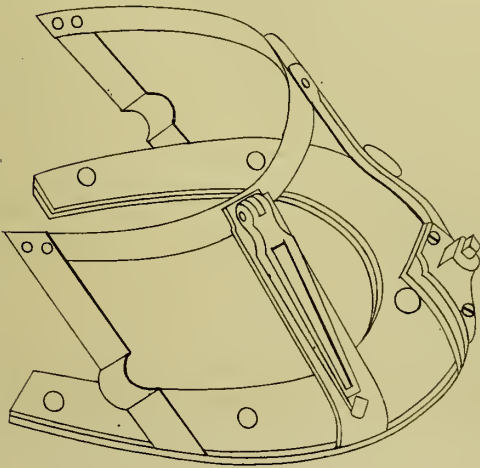
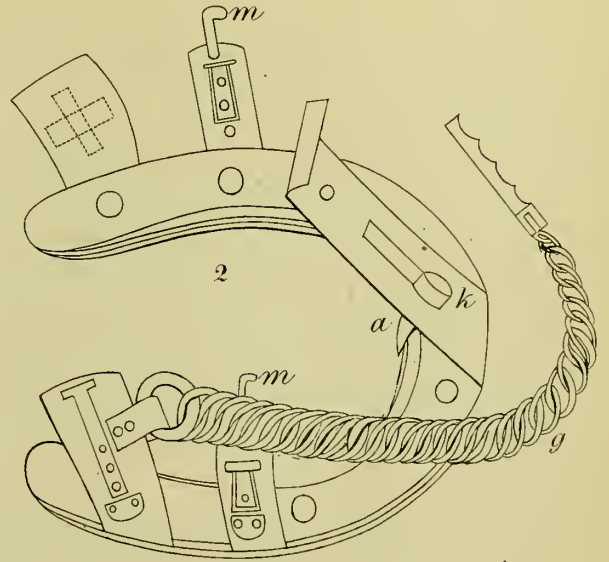
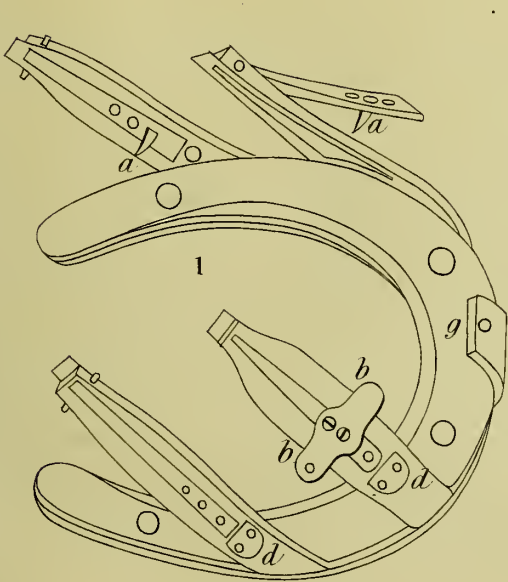
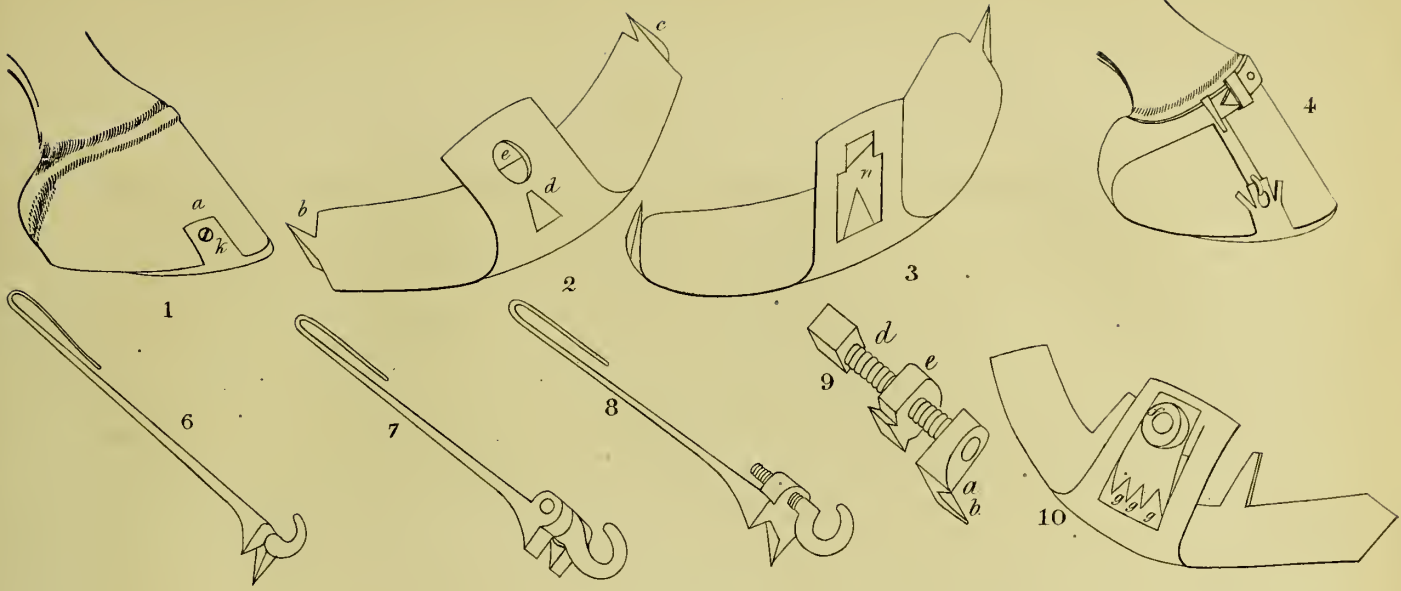
Fig. 1 is a shoe of this kind made entirely of steel, the upper one is intended solely for fixing it to the hoof; beneath it is a second, for receiving the wear of the roads, which is renewable, the other permanent. The points, *a, a, b, b*, after the shoe has been slid upon the hoof, are driven laterally into it, which prevent its return, and the button or nut, *d, d*, serve to fasten down these arms or indexes, which open by a hinge or pin at the other extremity; *g*, is a piece for securing the toe or front of the hoof, having a hole for a pin. The tops of these stays which receive the hoof may be connected together by a band of steel or leather, making them firmly embrace the hoof, and preventing their flying from or relaxing by the pressure of the lateral points, as in Fig. 3. These points may be shifted, if required, there being two or more holes in each tongue, for screwing them into.

Fig. 2 is also a double shoe, and differs from the former by having in front a steel piece moveable on an hinge provided with a slit, in which a steel tooth, *a*, slides up and down, and is fastened at any part of the notch by the nut, *k*; this tooth passes into a hole made by a passer at right angles to the slope of the front of the hoof, and adjusted by the groove, is then fastened; a curb chain, *g*, passes round the top of the hoof and secures it. The hooks, *m, m*, serve to keep the chain in its place; at the extremity of this chain is a notched steel pin, which fastens it by a small bolt with any degree of tension: this chain may also be covered with leather.

Fig. 3 is a shoe somewhat similar to the former; the toe is fastened or locked by a diagonal pin, which is then secured by a notch and point, revolving on its axis. A band or web is passed over the bulbs to assist its firmness; the stays for the points are also different to the former.

Fig. 4 is a shoe, formed of elastic straps of steel, and combined about the top of the hoof, having numerous points which enter laterally into the hoof, on the









closing of the straps by the steel band and secured by the rack-clasp. One of the pieces opens on an hinge, the better to let in the foot, and carries a flattish stout point, which enters the hoof on its being closed, urged by a hammer or the hand.

We may just here remark, that the shoe used occasionally by the Romans in cases of great abrasion, was a sock of leather, enveloping the foot, beneath which was a stouter leather sole, or *lemniscus*, and sometimes beneath this again an iron shoe, or *glans*, as they called it, as we learn from Vegetius, these constituted together a tolerable defence, and which also would yield to the actions of the foot, and be consistent with its natural intentions.

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*Of the different Forms or Figures which the Horse's Hoof is seen to assume.*

In the Hipponomy the actual structure of the hoof is attempted to be given, but we did not choose to lengthen that account at that time, by any detail of the different forms which individual feet are seen to assume, and which we now place here, though properly belonging to that department of the subject.

The appearance the horse's hoof makes when arrived at about three-fourths of its gestation in the womb, may be seen by referring to Pl. v. Fig. 1, p. 96, of the Hipponomy, with some original remarks on its conformation and singular aspect, which we shall not repeat here; and at Fig. 2, of the same plate, is seen the form it takes about the period of birth.

In this state we have compared it to the half-expanded rose-bud, where all the parts of the future foot are seen to exist in different degrees of development, their respective forwardness appearing to depend on the necessities of the animal, and are awaiting the gradual process of their unfolding and of being brought into their final development, form, and strength, at about the eighth year.

The *wall* or upright part of the hoof is first in readiness for its office at the exit of the foal, and is alone sufficient for his support; it then envelopes the foot in a very collapsed state, and performs nearly all the business of the foot. The foal having a very light carcase, it has not to sustain any very great weight or pressure, except when his own inclinations lead him to display before his dam in playful tricks his extraordinary suppleness and activity; the length of his limbs and his small body give him a wonderful swiftness, and springing, easy carriage, that is not surpassed at any period of his life; and his fetlocks, upright and straight, occasion his going

to be very much on the toe or front parts of the foot, and therefore confined very much to the wall.

The wall, whilst in the womb, is somewhat pointed in front, or drawn together and contracted like a bird's beak, as seen Hippod. Pl. v. Fig. 1, this nearly disappears at the time of birth; as the body, after birth, grows and increases in bulk and weight, so the sole and furch, and other parts of the foot, are brought more to the ground in aid of the wall, and with the more elastic parts become developed, expanding to receive the increasing weight and longer continued exertions of the animal. The sole from a stout membrane becomes a horny covering, and dilating with the hoof makes way for the formation and development of the softer frog, and at last comes the frog-stay, and completes the machinery. How impressive these facts of the mischiefs which must accrue from early shoeing, where the restraints of the shoe must impede and disfigure these natural operations. For the hoof of the horse is not a mere rude box or covering of horn, to protect the finer parts beneath, but an exquisite elastic machine for receiving the weight, and springing to every impression and exertion of the animal, and assisting his advances by a return to its natural form again. The furch or frog is also performing the subordinate office of bow-string to these operations, restraining the parts from too great extension, and aiding its return to its first condition; not a wedge, as heretofore supposed, to force open the heels or harder inflexions and wall, which, from its being a soft part, to have performed would have been the very inversion of good mechanical principles, or the employing a wedge of dough to cleave a block of wood.

The hoof, I may observe, in its formation, assumes a variety of shapes, some less perfect than others, and differences in the relative strength of its parts; though we cannot alter the original mould or stamp of parts, still some of these differences or defects may in some degree at times be improved or rectified by art, or the tendency to weakness be prevented from increasing, by judicious measures.

I propose now to attempt a brief description of the perfect hoof, and some of its varieties. The following is an enumeration. *The good natural Hoof and Foot. The upright or Mule Foot. The lumpy Foot, or large Hoof and little Bone. The small Hoof and projecting Coronet. The trumpet Hoof. The flat Hoof. The ribbed Hoof. The incurvated Hoof. The foundered Hoof.* There are others of less note and various mixtures. The following is a more particular account of these varieties.

THE GOOD OR PERFECT FOOT has the wall of the hoof nearly of a cylindrical figure, a little dilating downwards, smooth and stout, of a proportionate size to the

limb and body, with a due distribution of size and power between the solid and elastic parts; *the Furch*, occupying at its base about a sixth part of the circumference of the whole foot, well closed by a stout tough and entire *Furch-Stay*, a broad elastic *Furch-Band*, with dense and large *Intortional Bulbs*. *Sole* moderately concave and elastic, freely exfoliating. *Bars or Inflections* prominent and bold, handsomely sloping away from the furch. *Coronet* handsomely rising above the hoof, neither bulging over nor yet sinking down within the hoof;\* this part is formed chiefly by the large cartilages, and being supported by bone of due size, completes the well-formed foot.†

Almost any ground would suit such a hoof and foot; but dry and elevated ground I apprehend is more suiting the constitution of the horse and his feet.

*The High or Mule Foot.* This kind of hoof is narrower than the former, and perfectly cylindrical, more upright, and in general of a harder and more compacted horn; white stripes, or broad perpendicular ribbands, are often seen with these. The furch is smaller and much raised, as is the sole more concave: perhaps the best calculated for being used without defence of any. I have thought the chestnut-coloured horses were more subject to this sort of hoof.

*The Large Lumpy Hoof.* By this inelegant, but expressive term, I intend to denote a hoof, in which the foot seems half buried and sunk as it were; this arises from the bones and cartilages being small, with the hoof capacious, and also in general thick and heavy. Horses with this structure of the hoof and foot move in a peculiar manner as though swinging a weight; and if they fall, fall desperately. This form of hoof is not unfrequent in coach horses; but is not confined to them.

*The Small Hoof and Projecting Coronet.* The hoof here embracing the foot very closely, is smaller, strait, and stout; the coronets, as though squeezed, overhang the hoof. I have thought horses rather less than the middle size, fiery in temper, and of a black colour, were more subject to this make. The bones also appear too gross for the dimensions of the hoof; if any good could be done by damp relaxing situations during the growth of the hoof, one should expect this kind of foot would be the most likely to be benefited by it.

*The Trumpet Hoof.* By this I understand, a hoof narrow about the coronet, of a rounded figure, and widening downwards conically; this sort of close embrace about the upper parts of the foot appears to occasion pain and fever: it is in general I believe not a natural defect, but the consequence of shoeing.

\* The expression of Columella "*Coronis mediocribus*" is well chosen.

† The inclination of this hoof from the perpendicular is about 33 degrees.



*The Flat Hoof.* Extraordinary flatness is sometimes seen in hoofs, and such would be rendered still flatter, and more feeble, by exposure in low, damp, relaxing situations; this kind appear to bear the effects of the nailed shoe better than others, and I believe may even in some cases be supported and improved by it, and it is observed they last longer than others. *The Furches* often in such feet hang low, and are large and relaxed; rottenness, crumbling, and decay of the horn, and fissures, occur in these, as also at times in all other kinds of feet. In such cases, I have dressed the horn with the *Oxymel Æruginis* with excellent effect, applied with a brush, thereby inducing a more firm and healthy secretion of horn. The *Sulphat of Zinc* has also much the same effects, dissolved in water, in the proportion of about two drams to an ounce, the foot being kept dry in such cases. Washing with a water-brush and water is also to be recommended; and the frequent anointing with tar in wet situations. In the growth of all feet, great attention should be paid to the *Furch-Stay*, as its integrity is the sure guarantee from *Thrushes*, or, if I might venture to restore again the old and proper English word, "*Frushes*."

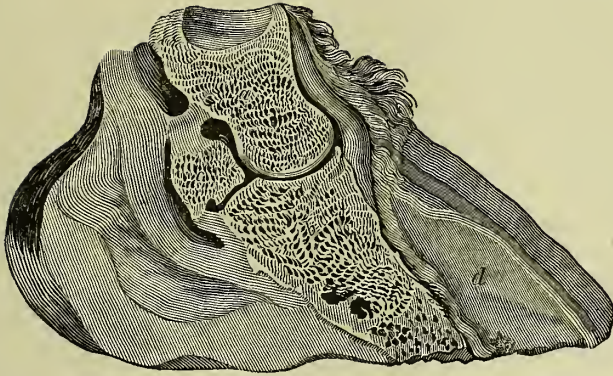
*The Waved or Ribbed Hoof.* This kind of deformity of the hoof proceeds from want of proper stability or fixedness in the coffin-bone, which sinking in the hoof, rests with undue weight on the sole: the *Furch-band*, in these cases, from its adherence to the skin, is in a remarkable manner extended or drawn over the upper edge of the hoof, thus distorting and disfiguring its growth. Weakness from shoeing, sudden chills, or over exercise, usually produce it: it is indeed a *Partial Founder*.

*The Incurvated Hoof.* This name is given to an hoof that is bent inwards in front, which arises sometimes from natural formation, or weakness only; at other times, I believe, from the coffin-bone in its descent, dragging the front of the hoof inwards along with it. Broad shoes, and supporting the sole, in the manner in which I shall hereafter describe under *Founder*, is the best remedy at present known to me.

*The Foundered Foot.* We have already described in part this singular disorder in the Podora, p. 32, and in order to avoid any unnecessary repetition, propose to add here only what farther relates to this complaint, the two essays together forming a tolerably comprehensive view or treatise upon it, for it has indeed been truly little known or understood before. In a system of the foot however, this miserable affection should arrange more properly among the nine maladies, most of which the foot is incident to after the commencement of the shoeing, and in a future edition will appear there.

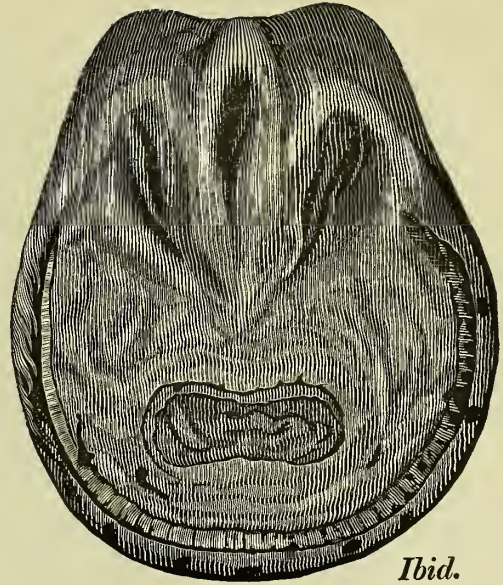


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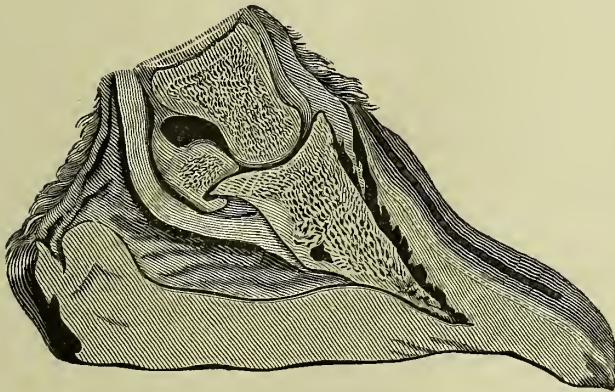
PEDICIDA recens ; *Complete Founder.*

2



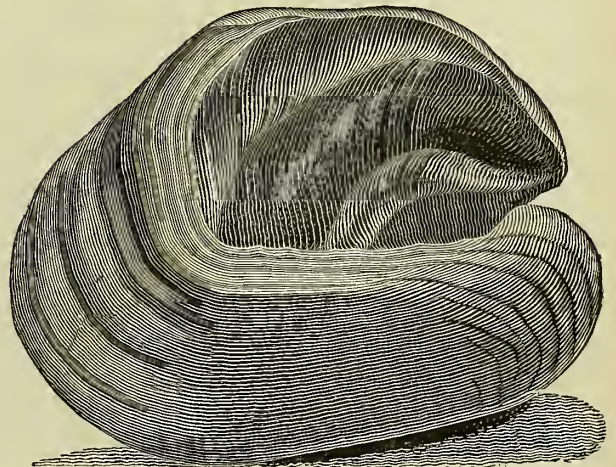
*Ibid.*

3



PEDIMOTA ; or, *Partial Founder.*

4



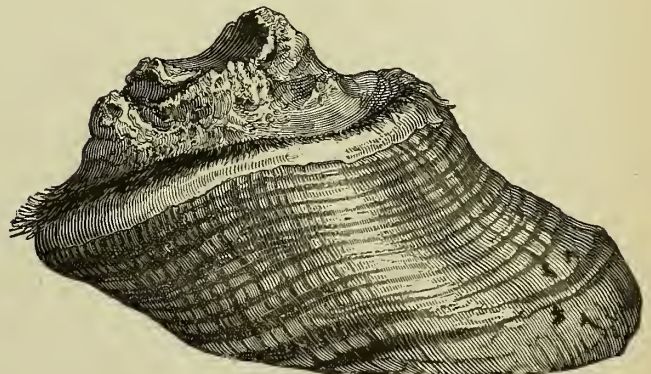
*Old Founder's Hoof flattened at top.*

5



*Old Founder, with absorbed Coffin bone.*

6



*Hoof running to Toe.*





A sectional representation of a foot so circumstanced is seen in the annexed cut, Fig. 1, *a*, *b*, *c*, the coronet, coffin, and shuttle-bones. Now, in a section of the natural good foot, the front line of the hoof is parallel to the front line of the coffin-bone, or nearly so, but here we see the bone has fallen down, and is resting with its front edge on the sole, just anterior to the point of the furch, *d*, is a singular mass of *corneo-cartilage* occupying the former place of the bone, and in recent acute founder is filled with the extravasated fluids from the vessels ruptured by the displacement of the bone.

Since these sunk bones can never again resume their lost positions, or be a support to the hoof in the proper natural direction of its growth, the weight of the body now acting upon it in an unnatural manner will cause it to become variously disfigured, sometimes bulging externally, or becoming inordinately thickened in the middle or all the way down, sometimes with elevated and depressed ribs and wrinkles of horn, and assuming indeed the most grotesque figures and shapes, often to the wonder of those who collect these hoofs, and are not fully aware of the causes of these malformations. Its summit also sometimes in a remarkable manner becomes flattened and depressed, and which is discovered to arise from the operation of the furch-band, curiously acting upon this part being dragged over the edge of the hoof by the descent of the bones.

Now the prodigious thickening of the wall may be explained by the altered relative condition of the cutidura, which sinking along with the interior foot, and being partially detached from the cutigeral cavity, widens, and becomes flatter, nearly effacing the depth of this cavity, and so becomes enlarged in its extent, and consequently the extent of growth of the horn enlarges also, see Pl. ii. Fig. 4, where the hoof is converted into a sort of clumsy wooden box, for the very nature of the horn is changed in this complaint, by a morbid growth. The flat appearance also of the summit of the hoof is here conspicuous, and the inordinate thickening of it, as also the lengthened effaced cutigeral cavity; many waves or wrinkles are also perceivable towards the posterior or inflexural parts, which arise from the disturbed regularity of the growth, and partial detachments.

Not only so, but we have formerly seen, in describing the Podophylla, that there is very little doubt that these are every where enveloped with a covering of the *kerapoietic*, or horn-making membrane, the same that covers the cutidura, and we are therefore led to believe, that wherever the surfaces of the podophylla become detached and exposed, that they also will take on to secreting horn, which will sufficiently account for those immense thickenings, and those anomalous formations in any part of the hoof where they occur.

The appearance of the under side of the hoof, Fig. 1, is represented at Fig. 2, where the sole is laid open, to show the position of the coffin-bone; this was done during the life of the animal, for it was sturdily asserted by the farrier, to be a *shoulder lameness*, till I proved the contrary, by making this opening. The retiring base of the furch, and the tumid appearance of the surrounding horn, and the half obliterated cavities of the inflexions, are also seen. The cause of founder, in this case, was a servant riding the horse vehemently from a distance in the country to town, for his master's use.

Fig. 3, represents a hoof bent *inwards* in this complaint, the toe very much projecting and thickened.

When founder takes place, it is known by the sunken appearance of the foot in the hoof, by the bristling of the hair round the coronet, and by a chasm or depression within the edge of the hoof, sensible to the finger, and by the fulness of the sole before the point of the furch.

The point of the furch is, as we have stated, pressed downwards in this complaint, and is fuller than it should be; while, on the contrary, the base of the furch appears to be drawn upward or internally, which at first was a difficult circumstance to explain; but is accounted for, by considering what takes place in the disturbance of the bone, that a sort of rotation about its centre attends its descent, or a dipping of the front parts, which elevates the posterior parts of the bone or *retrossa*, with which the base of the furch is indirectly connected; and the tumid state of all the surrounding parts from extravasated fluids will also make this sunk appearance the more conspicuous. See Fig. 2, *k*.

Simon, an Athenian, the most ancient writer on this art, quoted by Xenophon, but whose work is entirely lost, "well observed," as Xenophon expresses it, "that the good hoof, when struck upon the pavement, sounded like a cymbal, and was concave."\* He by this plainly distinguished the healthy from the foundered foot; for it is evident, if the concavity of the hoof be destroyed by the sinking of the bone, no sound can be produced.

Feet that were foundered, were called by the Greeks *μαλακοπόδες*,† or soft-footed; the Romans used the same phrase.‡ It is clear, however, they used it in a more extensive sense, for any weak, flat, or ill shaped foot, and founder was confounded

\* Σιμων δηλους ειναι τους ευποδας, καλωσ λέγων, ὥσπερ γὰρ κύμβαλον ψοφει πρὸς τῷ δαπτέδι, ἢ καλὴ οὐλῃ.

*Etiam sonitu recte memorat Simo pedum bonitatem prodī. Nam ungula concava solo impacta velut cymbalum resonat.*—XENOPHON Περὶ Ἱππικῆς. Ed. Francof. 1596, p. 933.

† ABSYRTUS, *apud Script. Græc. Vet.* p. 252, *et ubique*.

‡ *Molli fulla pede.*—HOR. *Naturaliter autem molles ungulae solidantur.*—VEGETIUS, *Lib. 2, cap. 58.*



age, in order to observe the progress of the natural foot; and, on some occasions, my knowledge was not very cheaply obtained, for on using these young horses, I discovered that the greater number of them were lamed in some way or other in bringing up. Out of near a score that I purchased at various times, not more than one or two were found on use to be sound, though they had never been broken in or used; this I could trace to the unsuitable nature of commons and farm-yards, where the young horse, active and thoughtless, is ever running into danger, if the opportunity of doing himself mischief is not carefully removed: where many are kept together, they are exposed to the greatest risk, of kicking one another on the hocks or point of the shoulder or other important tender parts, or of having their shoulders beat in, through the carelessness of servants leaving the gates half shut, which would the more close upon them as they endeavoured to force their way through. Hurdles caught the legs of some; others, by rushing through narrow doors, injured their hips; others, in the absence of their masters, had been vehemently rode; others brutally assaulted with improper weapons; some staked; others had strained themselves irrecoverably, by chasing about in improper ground, that the hazard of their ever arriving in a sound state, to four, or even three years old, must have been very great, and sufficiently accounted for what I had experienced.

To avoid these losses and disappointments, I was at last reduced to the necessity of bringing them up by hand in my own stables, without the use of any field, or only occasionally. By this means, they were indeed saved from violent injuries, but were subject to the defects I have just mentioned; and I further observed also, that their living chiefly on hay generated in a remarkable manner abundance of worms, of that species, which soils the anus with white matter, like birds' dung.\* But I am the more induced to mention my experiments in this way of rearing them, from having at last found out a way of obviating a great deal of the above inconveniences, which may be useful to such as are compelled to keep their horses a long time in the stable, whether young or old, which was,

\* Three or four species of worms are found in the intestines of the horse; one only of these appears to produce this sort of white matter, the *Tricocephalus Equi*, or *Whip Worm*, the one end being very large, and the other tapering to an extremely fine point like a dog-whip: this small end has very naturally been mistaken for its tail, but is in reality the head of the animal. And this white secretion is formed of the putrid juices of the worm turned to this colour after its death, their skins becoming tender and rupturing in passing the sphincter of the horse's rectum with the dung balls, when this white matter escaping falls upon the perineum and soils it, for it is usually imagined the excrement of the worm. The other intestinal worms produce, I believe, no appearance of this sort.

by substituting *a large bran mash* every day for the mid-day feed, instead of hay, which appeared to agree with them particularly well. Oats, where there is much confinement, if given in any considerable quantity, is of too inflammatory a nature, though their occasional use to young horses at grass may be very beneficial.

To prevent the numerous disasters of commons and farm-yards, and to bring up the young horse in perfection, separate paddocks appear to be necessary, with a proper shed or hovel in each for feeding and for shelter. The most complete I have ever seen for this purpose are at Hampton Court, constructed for the young stud of the Prince Regent, and which appear to be admirably well adapted to this intention. The following brief description of these paddocks may not be unacceptable to the reader.

A wall bounds the north side of this Park, and separates it from the great Kingston Road; an extensive enclosure of a part of the park adjacent to this wall, is subdivided into paddocks by strong wooden fences or longitudinal partitions, placed in lines parallel to each other, and at right angles to the above wall; and these inclosures of very oblong figure contain each about two acres of ground, and from eight to ten of these are seen along the wall.

The sheds, or stables rather of these paddocks, are built against the wall at every other partition, and being double, each is made to serve two paddocks, by appearing on either side the partition. A stone trough for water also appears extending on each side of these wooden fences, so that water poured into them on either side will serve both paddocks.

A transverse partition is thrown across each paddock at a little distance from the stable, by which a convenient stable-yard is formed for inclosing them in, if necessary. The racks and mangers of these stables are of the most simple construction, that the colts, however wild, cannot hurt themselves with them; the doors are made of a good width, and the door posts provided with rollers turning on an axis perpendicularly, placed about the height of the hip-bones, that the young horses rushing together into the stable should not hurt their hips or shoulders. In order for persons to pass with safety from one paddock to another, double doors are also provided in the partitions, with a space between them, that the horses should not rush through, one door being closed before the other is opened.

On the opposite side of the Kingston road, in Bushy Park, are also similar plots of ground partitioned or walled off from the park, but considerably larger, for the brood mares, each paddock containing about three acres of grass land. By such arrangements as these, horses may be reared with tolerable certainty and



perfection, and the expence and trouble will be amply repaid, as well by the superior value and soundness of the horse, as by the superior satisfaction that must attend his use.

In respect to the feet of such colts we may observe, what may perhaps appear almost unnecessary, that there is little cause for interference during the growth of this part, as nature will best perform her own work; a broken hoof may require to be rounded with the rasp, or a weak furch may want the dressing we have before described, but he that does more may do mischief: this I speak in the painful recollection of an instance of shameful ignorance in a Veterinarian, who officiously cut out the feet of a numerous stud of young horses belonging to a nobleman in Devonshire, in order, as he stated, "*to open the heels:*" the consequence of which was, that many of this young stud became miserably disfigured and foundered. For the foot will best extend of its own accord, and the contracted state of the colt's foot has no relation whatever to that which proceeds from the effects of shoeing.

This present division of the subject, which relates to the raising the foot to its greatest perfection, might, by way of distinction from other matter respecting these arts, usefully receive the name of *Eupodologia* or *Eupodology*, from *ευποδος*, beautiful footed, including also the raising the young colt perfect and undamaged.

The horse, and especially his foot, having acquired as much growth and development as can conveniently be allowed, we have next to consider of his application to service and being brought into use; the more he trenches upon his fifth year the better as respects the foot; whether the breaker-in should, after due consideration of the whole question, (if he be competent to it, for certainly the far greater number of this class of artificers are not so,) whether he should, with propriety, prefer three, four, or five, for the undertaking, I know not. An early sacrifice and occupation of his task will be his plea no doubt, as he would contend it would facilitate the proceeding both as respected himself and the smith; but I should much doubt if this proposal of his ought invariably to be acted upon, for if some particular cases did require it, it would by no means follow that the generality did, or that they could not be as well or better undertaken at a more advanced period, when the strength of the limbs was more consolidated to withstand the shamefully violent measures they sometimes are subjected to, for the breaker, to gain their ends with them, such as no prudence or real skill could justify, as the riding them down in ploughed fields, &c. That I would whisper a word of caution as to whom they confide their young animals, and I could greatly desire to see published directions sound, sensible, scientific, and simple,



for this art of breaking also, for nothing respecting them can be more wanted.

As the day of first shoeing is a grievous day for the horse, the commencement indeed of a black catalogue of troubles to him, so we would desire to put it off as late as possible, as the iron and knife will then make less ravages on the foot, and his limbs will better withstand the violence that often attend his first lessons: not only does the breaker recommend an early shoeing however, as occasioning himself less trouble, but the smith has less to fear from the young than from a more advanced animal; and a drink-money usually regales the first shoeing, which will not at all tend to retard the day of its application, and especially as the effects of their measures in regard to the shoe were certainly not known to one or the other of these artificers till of late. We therefore should recommend as late a day as the experience of a well-disposed and intelligent breaker shall ascertain to be good, and that the shoeing be deferred to the very utmost verge of that period; and that this miserable day may be prorogued to the latest, we should advise his being broken in on soft or sandy ground, or the green sward, or perhaps on a strong boarded floor, or flag-paving, naked like the causeway, or covered with straw, either loose or formed into rude mats by lacing with twine—a useful employment for the children of the poor. I am no great admirer of the tan-beds used in riding-houses; if dry, it fills the eyes, nose, mouth, and lungs; if wet, it clogs and balls in the horse's feet, and wrenches them laterally, or strains and relaxes the fetlocks. If these things are attended to, there will be no occasion to nail up his feet in iron bonds at all during the period of instruction, and thus add to the severity of his lessons and restraints the troubles of his feet. And assuredly, every sacrifice of time and delays of employing these gross measures will be handsomely and amply repaid in the goodness of the feet of the animal, and his future agreeable services.

FINIS.

#### ERRATA.

Page 16, line 5, for *Clip*, read *Tip*.

— 20, note, for *driving the nails*, read *drawing the nails*.

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by them as with us till lately with such feet. The bone of the hoof, or coffin-bone, losing its situation, loses also after a time its figure; its sharp edges are removed by absorption, and after a lapse of years, if the horse's life is preserved, becomes reduced to a small rounded mass of bone, resting in a cavity of the thickened sole. In this state were found the bones of the celebrated horse *Eclipse*, now in my possession, the shoeing and the violence of his racing having foundered him, not from his covering mares, as St. Bel used to teach us.

Some hoofs in this ligneous founder, or where the hoof is thickened like wood, become contracted in their upper opening to such a degree, as to diminish to half its natural circumference, bulging below, and carried out anteriorly. This arises from the foot bones sinking, so that instead of the condyles of the coronet bone being opposite to this upper part or opening, the thinner middle of this coronet bone occupies it, which permits the hoof to contract round it. See Fig. 5.

After long shoeing has weakened the parts which connect the bone and hoof, founder can happen from truly small causes; a very remarkable number of horses were foundered in the dry hot summer of 1807, as it appeared, from the mere effects of exercise and heat.

This complaint is also often produced very unnecessarily by the interference of persons unacquainted with the nature of contracted feet, and the singular effects of shoeing upon them: they endeavour to restore such feet, by taking off the shoes and by applying wetted clay or poultices, or other relaxing things, to the hoof; by which means they indeed enlarge the circle of the hoof, but, as it opens to a certain extent, the coffin-bone falls, or is disturbed, not having its usual support, and founder in a greater or lesser degree is the consequence; for bones cannot enlarge, it is evident, though the hoof may.

Horses, which have become foundered, often put out their feet whilst standing in the stable, as it should seem to relieve themselves, by pressing upon the heels; also in going, they sometimes take long steps, and appear to go boldly, which deceives the unaccustomed to this complaint, and they mistake it for good action; they however draw back their feet again so as to bring the hind parts as much as they can first to the ground. Their manner of going, it is true, will much depend upon the nature or manner of the derangement of the foot, for some go wholly on the toe, with short steps.

It will hardly be necessary to observe, that such feet as are foundered should be carefully avoided, in purchasing horses, or such as are likely to become so. The cylindrical form of the hoof, it must be obvious, more firmly embraces the



included foot than the conical shape, so the hoof of this form should be avoided, as communicating a greater tendency to this complaint from slighter causes.

### *On the Treatment of Founder.*

As founder is not of unfrequent occurrence, the reader may perhaps be desirous of knowing what treatment we have found to be most successful. In a very extreme case, such a one as is represented in Plate iii. Fig 1, the first and least loss would be in destroying the animal; but where the bone has not been so entirely separated, as in Fig. 3, or less disturbed cases, we should recommend from experience the following treatment. We apply to the foot a circular or bar-shoe of more than ordinary width, protecting the sole, and taking an extensive bearing on the ground, which appears to give great relief to the animal; leaving an opening sufficiently large in the centre of the shoe conveniently to admit the stopping, or about the bigness of a hen's egg.

The stopping I use, is coarse herds or tow, soaked in water, then smeared with tar or rosin softened with oil; it supple and cools the horn, and by using a very moderate pressure, supports the sole, which greatly relieves, especially after the first stage. The stopping should be removed daily, that it may not get too dry, and also to prevent any casual points of pressure, that may become painful if long continued. The exterior of the hoof and the coronet should be smeared with *hoof-ointment*, a composition of tallow, tar, and bees'-wax, such as I formerly recommended in Sand Cracks; it keeps the hoof elastic, and from becoming too dry and hard, as great heat attends this disorder. Bleeding from the coronet, as well as generally from the system, and gentle physic, in a recent case, is also necessary. Frequently immersing the foot in warm or cold water, or tying the foot in a bag, containing a poultice made of bran, or bran and fig-dust mixed, adding a little grease of any kind, is useful: however, relaxation I believe may be carried too far, and the separation be rendered more extensive by it than is necessary; that the poultice should be used with discretion. Also, in very recent cases, opening the sole to let out any confined lymph or extravasated blood, is advisable as early as possible; which will also tend to prevent the horn of the sole from being forced down.

Where a separation of the keraphylla from the podophylla has taken place, union again is hardly to be hoped for, yet we think it a very possible case, that the separation has only begun in the lower or middle parts of the hoof, and not universally, and that if the upper region especially, has escaped, a chance there is

then of the re-union of the whole by prudent soothing measures, and if the future growth of the horn be duly encouraged, by carefully removing here and there the detached parts. Opening a suspected hoof in various parts also cannot be objected to in recent cases.

The foot treated and supported as above will recover itself in a remarkable degree, and I have seen horses rendered serviceable to an extent that could hardly have been imagined, for nature wonderfully accommodates herself to her new condition. All sudden transitions of temperature and violent exercise, with feet so circumstanced, should ever after be avoided.

Bar-shoes, and broad expansion shoes, I find to serve these sort of feet the best, and also such as have been injured by being imprudently turned to grass without shoes and are threatened with founder, in which case they cannot be resorted to too soon.

Various other forms do the hoofs assume, which to enumerate would be tedious. One of these however, is worthy of notice, being very frequent, "*the running to Toe*," as the smiths call it, that is, when the anterior parts of the hoof acquire an undue strength and growth at the expence, as it were, of the sides and posterior parts: it may be accounted for perhaps, in that these front parts in shoeing are left more at liberty, having no nails in them, than the quarters, and therefore do not equally suffer; and this defect, we observe, is apt to increase very much by exposure at grass without shoes. The inflections also with these feet are often drawn forwards and are more shelving under the foot. Fig. 6.



I now conclude this present treatise on the foot, which, imperfect as it is, has been the result of much research and labour, ever having nature before me for my guide, and not books, so I trust it will form a more solid basis for the repose of the art than has hitherto been known. Of my predecessors, I have generally rather screened their mistakes than called them into notice, and hope to experience of future writers the same charity. The French have deemed it worthy translation, and two editions of it in that language have already appeared. The nomenclature of new terms has also been adopted in that country, and even by the colleges themselves. The Germans have also handsomely translated it; Frankfort, 1832.

The past sufferings of these animals we may indeed regret but cannot now recal; let us therefore in future, in our use of him, be more on our guard, since

this noblest gift of Providence was not bestowed without conditions: if the earth we cultivate requires previous consideration from us in order to obtain its fullest rewards; how much more then, to obtain his services agreeably and lastingly, does a living animal, with organs so exquisitely wrought. If the immutable laws of nature cannot be changed by us, we must bend our measures to them, and this we must indeed do in order to obtain the great benefits these worthy creatures can supply; and in conclusion let me just say, that of all others, the Veterinarian ought ever to be his chief protector from brutality and ill usage, as being, or at least he ought to be, the best informed in the laws of his frame and his physical forces.

Like the poor beast whose cause I advocate, I have also suffered ill treatment, and from those too whom my labours have most served. What is there of instruction that the College has ever produced, that has been found true? and what of my labours is there that has been found false? yet have my labours been nearly given gratis, whilst the miserable errors of the College have been sold most dearly.

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### ON REARING YOUNG COLTS.

WE now dismiss for a while the subject of the foot, for some remarks of a more general nature respecting the rearing the young horse; since it must be obvious, that good feet will avail but little, without a corresponding strength in the other parts of the body. His growth, at this tender age, should not be checked or impeded: and he should have a good supply of food, and neither be chilled by frosts, or lowered by exposure to damp, unhealthy situations, which lay the foundation of incurable disorders. From insufficient food, or of bad quality, they will be subject to various deformities, as large heads, gross jaws, large bellies, gleets of the nose, affections of the lungs, &c. Exposure to keen frosts, produces ill consequences to the eyes, and appears to be the cause of a certain white glare, which I had often observed in horses' eyes, but was unable to account for, till I accidentally witnessed its taking place in one of my own horses from this cause; this white suffusion resembles in some respects a Cataract, but is more generally diffused, and not of so opake a white as those spots.

My experiments upon the feet of horses, led me to purchase many at an early



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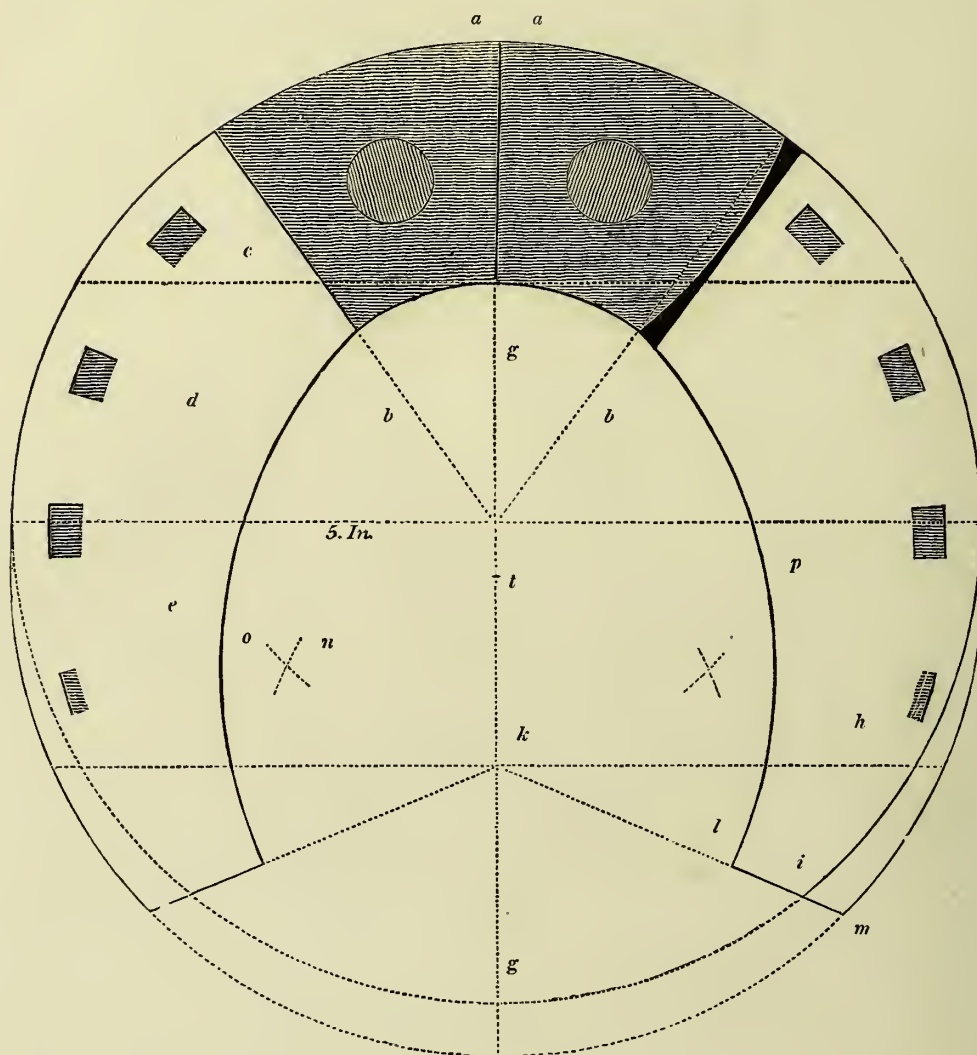


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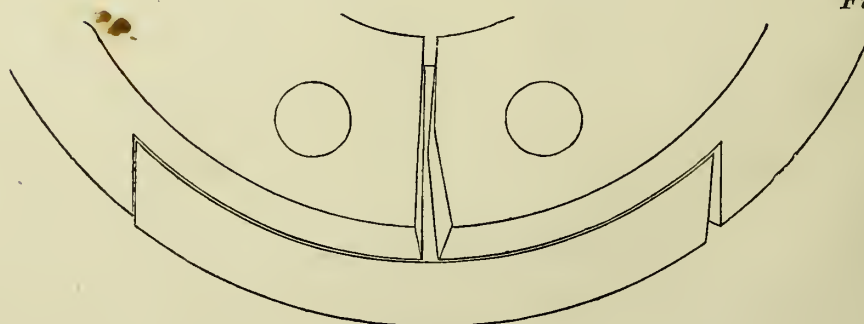


THE STEEL TABLET EXPANDING SHOE.



*Under Side.*

Fig 2.



*Front View.*

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